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AFTERBURNER vs THUNDERBLADE – *our verdict page 12*

Issue 2 • Nov 19,1988

NEW COMPUTER EXPRESS

First news, first reviews – every week

● Has this man paid £6m to IBM?
– see page 4

REVEALED!

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Fact-packed buyer's guide pages 15-20

A section inside for YOUR machine – page 46

- Amiga
- Atari ST
- BBC
- C64
- CPC
- MSX
- PC
- PCW
- QL
- Spectrum

Secret Konix console plans leaked

Full story page 2

A perfect wordprocessor?

The dream comes true — page 39

DISKOVER DISKS!

A guide for beginners – page 35

EXCLUSIVE

SAHARA-B 24C

First review of the remarkable TOTAL ECLIPSE – *page 32*

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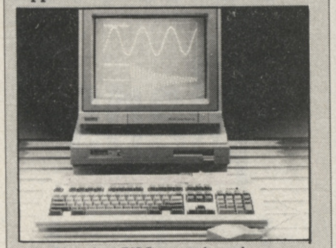
DON'T RISC IT!

Acorn last week fired a warning shot across software publishers' bows – any caught showing off Archimedes programs developed for the new RISC upgrade will risk excommunication.

This was particularly applied to the BBC Show held at the weekend. Acorn were keeping an eye out for exhibitors previewing new products. In all 90 publishers have seen and been trained on the new upgrade but have been warned not to show off any work thus far undertaken.

That will apply until the new RISC becomes available in the spring. Then, Archimedes users will be able to buy the chips for £29. New batches of the machine will be fitted with the upgrade.

"They have been able to see how to write applications for it but they have all signed non-disclosure agreements. We didn't force them to sign," said an Acorn spokesman. "Those who choose not to follow the rules may find that they no longer have access to software support."



• Archimedes: RISC upgrade under wraps

Coin-op Freescape

Freescape, the innovative programming technique developed by Incentive, could turn up in the arcades.

Incentive is currently talking to hardware manufacturers about the possibility of building a coin-op machine dedicated to running Freescape's solid 3D routines. However a finished machine would be at least two years away.

In an interview with Express, Incentive boss Ian Andrew suggested that Freescape in the arcades could run 100 times faster than in its current 8-bit incarnations and would be "an incredible experience".

DRILLER
FEATURING
FREESCAPE
SPECTRUM

• Driller: Freescape on 8-bit.

• Full interview p 33.

EXPRESS EXCLUSIVE

New machine will have 3-inch drive

KONIX CONSOLE LINKED TO EX-SINCLAIR TEAM

The secret new sub £150 console from joystick king Konix has been worked on by the ex-Sinclair team who are currently developing the revolutinary Flare micro. *New Computer Express* can also reveal the console will include a 3 inch disk drive when it is launched next summer.

Officially, Konix's machine does not exist. This is despite a prototype being shown to a handful of leading British software houses at the PC Show on a strictly confidential basis.

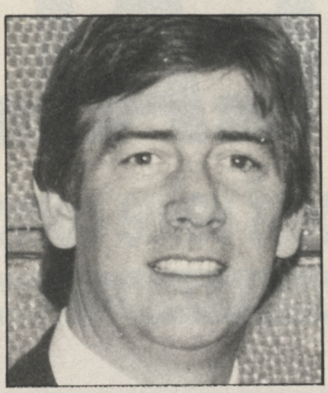
The breaches of this confidence – which have resulted in a string of published stories about the console – now look like resulting in Konix turning to American and Japanese firms for software support.

Industry sources have disclosed that the Konix console will utilise technology developed by ex-Sinclair team Flare Technology for its own machine. Konix is known to be impressed with Flare's work but has ruled out taking its machine in its entirety on grounds of cost.

"The Flare has been designed as the ultimate games machine, so much so that it couldn't be sold for less than £200," one well placed industry figure said.

Konix though had realised that Flare was working on broadly similar technical lines. There were discussions between the two firms and some additional design work has been done by Flare for Konix on a "six of one and half a dozen of the other" basis.

No official contracts have been signed and at this stage it is not clear whether Flare will be producing its own separate machine.



• Holloway: Irritated by leaks and reports

Flare director John Matheson refused point blank to comment on "our agreements", a phrase which may or may not refer to Konix – Amstrad and Atari have both been reported as showing interest in Flare's work.

Whatever, Konix is keen for the console design to be seen as its own. And further, it strongly believes in the virtue of a European machine. "We want to prove that the Europeans can do it and do it better than than the Japanese. That's one of the reasons we made our joysticks," explained a company insider.

The news that the console will include a double-sided 3-inch drive, similar to those used on Amstrad's PCW computers, will surprise some observers. However it could encourage wider software support by avoiding the extra costs of duplicating onto cartridge.

Konix boss Wyn Holloway is clearly irritated by premature talk of his new console and by inaccurate press coverage. "We make joysticks and we've sold over three million to date. If we were going to launch a console we'd keep as quiet about it as possible until the launch," Holloway told *Express*.

His aim has been to keep advance details away from rivals Sega and Nintendo. On the positive side the console's design, technology and price have evidently impressed many. Several thousand units are claimed to have been pre-sold ahead of launch, making it look already set on the path to success.

Wales-based Konix has been one of the fastest growing companies in the computer world over the past three years, thanks largely to the remarkable worldwide success of its Speedking joysticks.

Konix: the leaked spec

PRICE: Just below £150

LAUNCH: Due to be announced in February or March, it should be on sale in the summer.

PITCH: It's been touted as faster than both the Amiga and ST with better graphics and sound than either. It will run at about 15 Mips (million instructions per second).

DRIVE: A three inch double-sided disk drive included in the price. It will also support cartridges.

DESIGN: "Can you imagine a console inside a joystick?" offered one observer. Well, no not really. But the Konix console has a strong innovative design closer to arcade machines than other consoles.

NAME: Internally it is known as Slipstream, though this is not likely to be its commercial name.

Would you credit it?

- A gang of fraudsters was jailed for a total of eight years last week after using a souped up PC to clone thousands of cash point cards.
- The swindlers had used the PC, plus coder equiment to copy data from the magnetic strips of genuine cards onto 6,000 blank cards they had stolen.
- The two men and their wives then embarked on a cashpoint spree netting £25,000 in London, Birmingham and Walsall.
- They were caught because the machines retained many cards. A Midland Bank computer operator noticed the pattern of cards being eaten and informed the police.
- Judge Tim Lawrence describe it as a "cunning plot" involving "buying equipment with which it is possible to clone or copy these cards."
- When the women were caught they had around £7,000 left – their partners had none.

Cliff hits the fire button

At last: conclusive proof that there's nothing wrong with playing violent computer games – Cliff Richard does it so it must be OK. It emerged last week that the veteran pop crooner with the squeaky clean image is a sucker for golden oldie titles such as *Space Invaders* and *Pac Man.*

And, according to the Manchester Evening News, he especially requested that the violent arcade game *Guerilla War* be placed in his dressing room for an after concert shoot-em-up at the Manchester Apollo.

• Richard: Shoots-em-up

PC prices fall as chip prospects brighten

Another hardware manufacturer has cut the prices of its PCs due to the healthier supply of D-Ram memory chips.

Epson has lopped £50 off its entry level PCe FD which now costs £749. All other PCs in its range have enjoyed similar price cuts with high end machines being cut by up to £200.

Apart from the increasing availability of chips Epson is putting its price cuts down to increased demand among home and small business users as opposed to corporate customers.

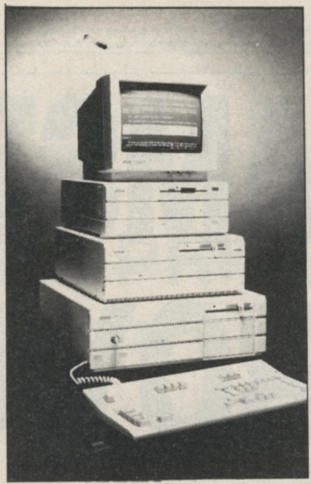
The firm hopes to pitch home users with more vigour following the £50 price cut. On chips, PC business manager Ian Phipps commented: "The D-Ram shortage hit hardest at the supply of our entry level PCe... Those problems now seem to be improving."

This follows Opus' anouncement last week of price cuts across its range of PC clones. And Atari has brought forward the launch of its new models after obtaining substantial batches of the memory chips. For months now the hardware manufacturers have been sweating out a drought of D-Rams. Most firms are now managing to secure more reasonable supplies.

Talking Japanese

On the subject of Epson, the Japanese firm is expected to unveil the first full colour liquid display portable PC in Tokyo next year. It features the new Neutralised Twisted Nematic screen which is claimed to have twice the contrast of standard screens.

However, it won't be in the UK for "a long, long time and perhaps never" according to a none too optimistic Epson spokesman. But a mono NTN version should be here next year.



• Epson PCs: All down

ROW HITS ATARI SHOW

Atari show organiser Database has found itself embroiled in a strange dispute with software houses.

According to Database, US Gold, along with Ocean, had been invited to sit on a panel at the show next week judging new software and offering tips and advice to young programmers. However, neither company had actually paid for a stand.

Another exhibitor, Microdeal complained Gold and Ocean would be getting good publicity from a show without paying for it. This, the firm argued is unfair, since it has paid good money to exhibit.

Boss John Symes told Database: "You have introduced unfair competitive practice by giving free space and promotion to our larger competitors." As a result Database says it "politely asked" US Gold and Ocean to withdraw.

But the company then put out an announcement saying that in a 'David versus Goliath confrontation', David had won. This statement has led to some dismay at Gold headquarters where the company denied ever having received the original invitation. A spokesman told *Express* the whole story was "absolute fiction" and that Gold was not planning to attend anyway.

Database, already in something of an embarrassing position, insists Gold was to attend. The firm claims Gold is suffering from a lack of internal communication. Database's Mike Cowley said: "We made the arrangements at the PC Show and we wrote a letter confirming it."

BORLAND SEES RED

Business software giant Borland was last week attempting to soften the blow of huge financial losses with the launch of new products.

Though prices have yet to be ascertained its new batch of products include Turbo Assembler and Debugger, Pascal Professional for integrated development and the Runtime Library Source.

Borland appears to have hit the classic 'fast growing company in new technology" wall with worldwide losses amounting to £3.3 million for the first six months of this year. That compares to profits approaching £3 million for the comparable period last year.

Ebulliant Borland boss and industry character Philippe Kahn admitted that there had been "mistakes". He added though that a feeling of "optimism for the future" is prevailing at the firm.

Despite that Borland France has undergone a drastic shake up. Following senior staff departures in France Borland UK now becomes HQ for Europe. Kahn is quoted as saying that Borland France's performance was responsible for a large proportion of the losses.

Borland joins a long list of firms which have come down to earth with a bump after extraordinary success in the computer market. They include Sinclair, Acorn, Commodore and Atari as well as many software publishers.

• Kahn: Big, big losses

That's Dandy! Desperate Dan gets his own computer game

Licence glutton Grandslam has scooped up another big name for next year – this time it's the Dandy comic.

Celebrating the esteemed journal's fiftieth anniversary Grandslam will be launching The Computer Comic in the New Year featuring characters such as Desperate Dan and Brassneck.

Most areas of popular entertainment have appeared in computer games to varying degrees of success This though is something of a first for a kiddies comic (superheroes notwithstanding). Defunct publisher Piranha had a go with 2000AD characters but fell short. It's expected that other comics will be emerging from Grandslam next year, depending on how the Dandy takes off. One suggestion is Dennis the Menace.

Shoot from the Lip... the week's most quotable sayings

"You can run Vic 20 games on the C64. You can use any Commodore games as long as they're lower than 64..."
A Laskys salesperson, proving that these high street folk really do know what they're talking about.

"People want Amigos and STs now. We only stock Nintendos." **Disillusioned Boots salesperson (and yes that was 'Amigos').**

"They've been closing hacking loopholes for some two years now, but it's very difficult unless you go over the top with expense. With thousands of users on one system it's like trying to secure a department store in January with fourteen entrances."
Comms expert Steve Gold on the future of hacking

"Being under an administrator has been really useful. It's made everyone pull together."
Financially troubled business software publisher's marketing manager Colin Bastable, evidently determined to look on the bright side regardless

NEW COMPUTER EXPRESS

OUR OPINION

I'm Big, Matey

It must be nice to be IBM.

For years you happily ignore the micro-computer revolution that's happening all around you.

When the phenomenon becomes big enough to be interesting you come out with your own machine (not worrying too much whether it's state of the art or merely competent.) And because you're IBM, all chicken-hearted corporate buyers decide they might as well play safe and opt for your PC.

Then, because there are an awful lot of chicken-hearted corporate buyers, most software and add-on developers decide they too had better jump on the IBM bandwagon.

The resulting explosion in IBM support forces other manufacturers to produce machines which can run the same programs and peripherals, causing a snowball effect which establishes IBM machines as the industry standard.

Finally, the ultimate delicious irony. You make the other manufacturers pay through the nose for supporting this standard. One per cent of all sales will do nicely.

Do you get away with it? Latest reports – see Amstrad story on page 4 – suggest you do. Computer manufacturers around the world must be gnashing their teeth.

Budget rethink

Here's a turn up for the books: budget games maestros Codemasters has upped its bottom level prices to £3 and established new labels around the £10 mark (see page 6 story).

For two years now all the evidence has pointed to a relentless move toward lower-priced games on the 8-bit machines.

Codemasters itself has screamed the message long and loud that full-price software is dead.

The arguments of the likes of Ocean that only full-price games can fund long-term development and decent marketing were scorned.

Until now.

Could it be that the demise of full-price software has been ever-so-slightly exagerrated?

LAUNCH EDITOR ***Chris Anderson*** • CONTRIBUTING EDITOR ***Peter Worlock*** • NEWS EDITOR ***Colin Campbell*** • REVIEWS EDITOR ***Andy Storer*** • STAFF WRITER ***Rik Haynes*** • PRODUCTION EDITOR ***Rod Lawton*** • ART EDITOR ***Julia O'Shea*** • ADVERTISEMENT MANAGER ***Mark Salmon*** • AD EXECUTIVES ***Jenny Evans, Sophie Lankenau*** • AD TYPESETTING ***Terry Turner*** • PUBLISHER ***Greg Ingham***

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Erasable CDs: next big thing?

Magnetic optic disks will be the future of mass information storage according to giant electronics firm Canon.

It has spent the past seven years developing an erasable disk system which, it claims, supersedes CD-ROM and laser disks and leaves traditional floppy disks nowhere.

Apple co-founder Steve Jobs has taken on the system for his new NeXT computer due to be unveiled within the next 18 months. Also, Canon is selling the technology to firms in seven different countries.

The disks reportedly resemble CDs although are superior in that they are erasable. They consist of two layers. The first handles information which is erasable and the second can store long term data.

The writing, reading and erasable functions are claimed to be far superior to CD-ROM technology which can only hold data. Write Once Read Many (WORM) systems have thus far failed to inspire.

Although Canon is gearing up for full production it seems unlikely that even the US market will see these products until 1990.

• Jobs: Picking up CD breakthrough

Filofax deluge

Filofax toting highflyers are facing a growing onslaught of organiser-related add ons and peripherals and, of course, their computer-based equivalents.

Business software developer Paperback is currently on the look out for add on databases to direct at PC owning yuppies. These will be compatible with the company's new organiser program and will cost just under £10 a shot.

Lists of restaurants in London, hotels in Lands End, airlines operating from Peru or buses to Arbroath are all, roughly speaking, the sorts of things in mind. Presumably the idea is that users really can organise their lives from a PC.

The organiser program itself is a direct upgrade of that which is bundled with the Amstrad PPC. Sourced from Clasma Software it should be around next year at "anything from £99 to £199" depending on how many extra bits Paperback sticks on.

• Dial Paperback from your car-phone on 0245 265017

AMSTRAD'S ROYALTY SECRET

A London firm of analysts has claimed that Amstrad paid out huge sums of money for the right to use IBM technology.

City analyst Sheppards Research said last week that Alan Sugar may have paid the giant US corporation up to £6 million in royalties – that would be more than the money paid for Sinclair in 1986.

The £6m figure works out as back payments of one per cent of all Amstrad PC sales since the 1512 was launched two years ago.

Amstrad has declined to confirm or deny that money was paid. Non-disclosure, it says, is part of its agreement with IBM.

But Sheppards' electronics expert Chris Whitehead is convinced that substantial funds were handed over: "When I spoke to Amstrad about it I felt that they definitely didn't want to talk about it and that they had paid something."

He added: "When Amstrad do something they usually talk about it but they were very tight lipped."

Amstrad's patents deal with IBM was announced in the summer and at the time Amstrad indicated that no money had changed hands. Instead it was trailed as a reciprocal deal whereby both companies would use each other's technology. However it was never clear what IBM would want out of Amstrad.

IBM has long been looking to regain royalties from clone manufacturers for all sales of MS-DOS machines. Last week Mitac was reported to have paid one per cent of all its PC sales.

An Amstrad spokesman told Express: "We have never confirmed any figures."

Industry sources suggest a public admission of royalty payments to IBM would conflict with Amstrad's brash image of doing things its own way.

Meanwhile, Amstrad has responded philosophically to an eight point drop in its share price. This followed large city analyst County NatWest revising profit predictions for Amstrad downwards.

"It's a volatile market," shrugged the Amstrad spokesman.

Despite their royalty claim Sheppards recommend Amstrad shares as 'quality stock' that should be bought.

• Sugar: £6 million pay out?

The race against crime

For those wanting more than the pet mongrel to stand guard over expensive hardware it might be worth investing in an anti-theft alarm.

Homeguard has come up with a device which sounds off a din if a connected micro is disturbed. One simply has to plug the computer's power-lead into the device – then if the wall plug is removed or the power cut Mr Burglar gets an earful of 107 decibels.

This is so loud that the £20 anti-theft alarm has won an award from an organisation called Design against Crime.

A new image

The programmers of System 3's Last Ninja series have had a new software label formed specifically to handle their future titles.

Although the programmers will continue to work for System 3, their games will now be published under the name Vivid Image.

Rod Cousens, UK boss of Mediagenic which markets System 3 software, described the move as a way of giving the programmers a greater sense of identity following the success of the Last Ninja.games.

Mediagenic has simultaneously announced another new label called Motion Picture House for a series of one-offs.

Declaring war on sexist software

Sexism in software has been earmarked as a definite no-no by one band of computer crusaders.

OASIS, the Organisation Against Sexism in Software, next week publishes its first newsletter in a special recruitment drive. Thus far the body claims fifty members of both sexes.

In the forthcoming newsletter it lays down a charter to any one wishing to join.

OASIS hopes to curb "sexist portrayal" of women in computer games advertising. It is also looking to change female roles in the games themselves.

Chairwoman Sandra Vogel explained to *Express:* "We want to get rid of some of the misconceptions about computers. It's true that the average home computer is owned by a male but women like to use them as well."

She said that OASIS members would busy themselves writing letters to magazines, software houses and the advertising authorities if publishers step out of line. But Vogel admitted that such actions would have little immediate effect. And she stressed that the last thing OASIS wants is a loony feminist image or that of a strict censor.

• Vogel: Sexism crusade

• OASIS is on 01 542 7261

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NETWORK NIGHTMARE FOR SAGE

Mainlan crash forces fast revision

Sagesoft has rushed out a new version of its networking system *MainLan* after it emerged that original copies had been crashing.

The company acted swiftly last week to replace every copy in shops and offices with a debugged version at a cost of several thousand pounds.

The expensive move was authorised after Sage received two complaints that the network hung up if left unattended.

"It's not uncommon for new products to have problems," said Sage boss David Goldman. "But the intensity of testing prior to the launch should have picked up on this."

The company claims sales worth £400,000 in the three weeks' since *Mainlan* was launched.

Paul Donnelly of Gem Distribution which handles Sage's products said the move would not cause users or dealers serious difficulty: "Sage are the best people there are at sorting out that kind of problem," he added.

All the users of *MainLan* should be registered so Sage is confident that no-one has been overlooked.

The network costs £199 per PC and can handle a maximum of sixty machines.

Goldman described the launch of *MainLan* as "our most successful ever" adding that it had gone "like snow off a dyke".

The market for low-cost networking systems has become extremely competitive with Amstrad pitching its own system directly against Sage's.

• More info from Sage on 091 284 7077

Codemasters ups prices 50%

• David Darling: another quid each for these

Codemasters – the firm run by the Darling brothers – has upped the prices of its budget games from their traditional rockbed of £1.99 to £2.99.

The firm says the extra money will be ploughed back into game development in order to produce "even better" titles. And it says software buyers won't mind paying the extra because "the games are worth more than that anyway".

It would appear that the success of Kixx and Encore's £3 games has prompted the decision. More and more software houses are settling on £3 as the ideal budget price with £2 games often being regarded as the poor cousins of gaming.

Old titles already on the shelves will remain at the original price but any new Codemasters £1.99 games are being ruled out.

"The money will be very useful," commented marketing manager Bruce Everiss. "I don't think the extra £1 will make much difference."

Codemasters' success over the past two years has been predominantly based on cheap games which sell exceptionally well to the younger gamers. "Our games deserve to be £2.99," insisted Everiss. "Inferior people's games will not come up in price."

This news comes at the same time as an announcement by Codemasters of full price labels. The old Plus label of £4.99 games has been repositioned so that its titles now cost £8-£9. And 'Codemasters Gold' has been set up to accommodate higher priced games for the 8-bit and 16-bit machines.

Beam me over a prawn cocktail!

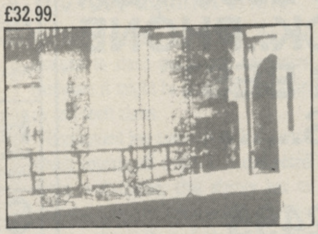
Computerised waiters could be all the rage in the near future.

That's the hope of Dunstable based Checkout Computer Systems which has developed an electronic order taker. Waiters can punch orders into a handheld pad and beam them to an infra-red receiver in the kitchen. The order is then printed out to the chef.

This allows waiters to move from table to table without having to deposit orders at the kitchen, although the food itself still has to be hand transported.

Joan of Archimedes

US Gold will be making its first sortie into the world of Archimedes games at the end of next month. Gold will be putting out the highly praised *Joan of Arc* at the rather astonishing price of £32.99.



• Joan of Arc: Archimedes boost

Snippets • Snippets • Snippets • Snippets

Smart meet

Smart cards are being heralded as the storage device of tomorrow and interest among the big money research and development people is increasing.

So much so that the second annual Smart Card Conference is to last for three days as opposed to last year's one day. Featuring the usual menu of conferences and discussions the conference begins on March 7th next year at the Hammersmith Novotel in London.

Appalling PR stunts of our time

Nouveau publisher Software Horizons is offering a bottle of champers to anyone who can guess what its next title is based on.

Dragonscape for the ST and Amiga is, according to Horizons, based on a 17th Century children's game which is still played today. The first person who manages to come up with the name of the game before the 27th of this month gets to quaff the bubbly.

Driving forces

The increasing level of demand for floppy disk drives is so great that Citizen has had to up its production from 140,000 units a month to 200,000. That amounts to 2.4 million drives a year.

It's been estimated that if every Citizen drive were loaded to capacity with text taken from the Encyclopedia Britannica it would take an ordinary person quite a while to read the resulting printout.

GAMES TOP TWENTY FULL PRICE

1	1	Last Ninja 2	*Spectrum, C64, CPC*	SYSTEM 3
2	3	Football Manager 2	*Spectrum, C64, ST, Amiga, PC, CPC*	ADDICTIVE
3	2	Daley Thompson's Olymp. Chall.	*Spectrum, C64, ST, Amiga, CPC*	OCEAN
4	7	Supreme Challenge	*Spectrum, C64, CPC*	BEAU JOLLY
5	10	Taito Coin-ops	*Spectrum, C64, CPC*	OCEAN
6	NE	Armalyte	*C64*	THALAMUS
7	4	Out Run	*Spectrum, C64, ST, CPC*	SEGA/US GOLD
8	20	1943	*Spectrum, C64, ST, CPC*	US GOLD
9	12	Track Suit Manager	*Spectrum, C64, CPC*	GOLIATH
10	NE	Savage	*Spectrum, C64, CPC*	FIREBIRD
11	RE	Menace	*ST, Amiga*	PSYCLAPSE
12	13	Elite	*Spectrum, C64, ST, BBC, Electron, PC, MSX, CPC*	FIREBIRD
13	6	We Are The Champions	*Spectrum, C64, CPC*	OCEAN
14	11	Peter Beardsley's Football	*Spectrum, C64, ST, Amiga, MSX, CPC*	GRAND SLAM
15	NE	Hostages	*ST*	INFOGRAMES
16	RE	Nigel Mansell's Grand Prix	*Spectrum, C64, ST, CPC*	MARTECH
17	17	Typhoon	*Spectrum, C64*	OCEAN
18	16	Road Blasters	*Spectrum, C64, ST, CPC*	US GOLD
19	9	Gold Silver And Bronze	*Spectrum, C64, CPC*	US GOLD
20	21	Gunship	*Spectrum, C64, ST, PC, CPC*	MICROPROSE

GAMES TOP TEN BUDGET

1	1	Joe Blade 2	*Spectrum, C64, BBC, C16, Electron, CPC*	PLAYERS
2	2	Bomb Jack	*Spectrum, C64, C16, CPC*	ENCORE
3	6	Footballer Of The Year	*Spectrum, C64, BBC, Atari 8-bit, C16. MSX, CPC*	KIXX
4	4	Commando	*Spectrum, C64, BBC, C16, Electron, CPC*	ENCORE
5	NE	International Rugby Simulator	*Spectrum, C64*	CODEMASTERS
6	5	Gauntlet	*Spectrum, C64, MSX, Atari 8-bit, CPC*	KIXX
7	7	Air Wolf	*Spectrum, C64, BBC, C16, Atari 8-bit, CPC*	ENCORE
8	9	Advanced Pinball Simulator	*Spectrum, CPC*	CODEMASTERS
9	8	Ace Of Aces	*Spectrum, C64, MSX, Atari 8-bit, CPC*	KIXX
10	20	Battleships	*Spectrum, C64, CPC*	ENCORE

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Devpac Amiga Version 2

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The Best just got Better!

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Devpac Amiga has always been the popular choice for assembly language programming on your Commodore Amiga. When it passed its second birthday we took a fresh look at it and realised there were a few things it didn't do that we, and you, wanted it to. So we re-wrote both the assembler and debugger totally from scratch, allowing us to add features that were not possible in the original versions. We then substantially improved the editor as well to give us an unbeatable combination of features - see the table.

The Editor - true integration

The fast editor is based on the original but with extras like block highlighting, a file requestor and the ability to make backups of your source files. The assembler and debugger are both available, instantly, at the press of a key.

The Assembler - no waiting zone

GenAM was always fast but the all-new algorithms means it's even faster, particularly on larger programs. It handles multi-hunk code, 127-character significant labels, local labels, improved macros & conditionals, generates directly executable, or linkable code, and a stand-alone version is included so you can use a CLI, a batch file or an alternative editor.

The Debugger - kills bugs, dead

How many times do you write a completely bug-free program? Trying to debug a program by looking at guru numbers is what some development systems leave you to do. We include a disassembler/monitor/debugger called MonAM, which uses its own screen display, leaving your program's output alone. It has a range of different types of breakpoints including count and conditional breakpoints. For example you can stop after the 24th call to print or stop if the contents of mem_ptr become odd. You can also break into runaway programs, or you can even view your source-code files from within the debugger and use multi-hunk program symbols.

Ideal for Beginners & Enthusiasts

The editor is fast and easy to use, you can assemble from memory to memory then execute it repeatedly to try your ideas out, all without a disk access. Press a key and you're straight into the debugger, you can even debug programs assembled to memory with their original symbols. No linking is required - the assembler can generate directly executable programs immediately. Interested in hacking somebody else's code, such as the ROM? - with the debugger you can disassemble to disk with automatic labels, including system calls. All programs will work on a 60-column display.

Ideal for Professionals

If you're not using Devpac for software development then you'd better hope that your rivals aren't either. Why wait for your editor to load a file or for your assembler to churn through it - GenAM is the fastest professional assembler available and is fully source code compatible with the MCC assembler. We write in 68000 assembly language every day so we understand what you need.

Ideal for You

Just compare the specification with any other product and we're sure you'll agree

Devpac Amiga 2 - There is No Competition

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Tel: (0525) 718181

	DevpacAm 1	MCC Asm	K-Seka	**DevpacAm 2**
Screen Editor	Y	Y	N	Y
Handles tabs as single chars	Y	N	N	Y
Step through assembly errors	Y	N	N	Y
Automatic backups	N	Y	N	Y
Integrated assembler	Y	N	Y	Y
Integrated debugger	N	N	Y	Y
Macro parameters	10	10	9	36
Multi-line macro calls	N	N	N	Y
Conditional assembly	Y	Y	Y	Y
Case flexible	Y	Y	N	Y
Local labels	N	Y	N	Y
Executable, relocatable code	Y	N	Y	Y
Linkable code	Y	Y	N	Y
Multi-SECTIONs	N	Y	N	Y
INCLUDE binary files	N	N	N	Y
Assemble to memory	N	N	Y	Y
Stand-alone assembler	Y	Y	N	Y
Section types	Y	N	N	Y
Debugger supplied	Y	N	Y	Y
Disassembler	Y	N	Y	Y
Multi-window	N	n/a	N	Y
Source-code viewing	N	n/a	Y	Y
Single-step	Y	n/a	Y	Y
Breakpoints	Y	n/a	Y	Y
Conditional breakpoints	N	n/a	N	Y
Full expression evaluator	N	n/a	N	Y
Multi-screen	Y	n/a	N	Y
Break into running programs	Y	n/a	N	Y
Disassemble to disk	N	n/a	N	Y
Example program source code	Y	Y	N	Y
Operating System libraries	Y	Y	N	Y
Version	1.2	11	1	2.0

Please send me the following for my Amiga:

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__ **Aztec C Professional**	£129.00	__ **Aztec C Developer**	£179.00

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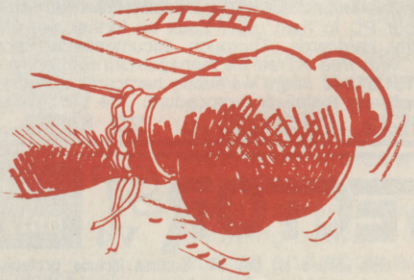

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STOP THIS EXPLOITATION

For a while now, I have been getting more and more fed up with the increasing amount of sexism in computer software and advertising. It seems to me that the 'objectification' of women (that is making them, or specific parts of their anatomy into objects of male pleasure) has recently become a prerequisite of many games. I am an ST owner, and see the trend clearest in this format, but it seems even stronger in 8-bit user bases, and is growing at an alarming rate.

There are really two reasons that I feel the treatment of women as objects is such a bad thing. The first is that it destroys the idea that women are individuals, and creates instead the idea that women exist only to please men. The use of women in this stereotyped way exists throughout the media, in fiction, in jobs, in fact in all walks of life, but in the software industry it is particularly harmful as it is operating on the young, many in their early teens, whose ideas about the world are still being formed. (I am also against the stereotypical male image presented of the muscular, hard hero who always saves the world/girl/universe).

The second reason is that women make up a large part of the home micro user base – in fact there are many more of us than either software houses or magazines care to admit and it's about time software houses realised this and started to produce material we might be interested in (and I don't mean cookery, knitting and babycare programs!)

So, OASIS has been born. OASIS stands for the Organisation Against Sexism in Software, and is a user group aimed at anyone who wants to change the current face of the software industry. Specific campaigns will be run as and when members indicate something they're not happy about. The group has a newsletter we offer a nationwide network for, gaming help and advice, airing our grievances, taking positive constructive and well-coordinated action, and hopefully offering some alternative software written by members!

You don't have to be a woman to join OASIS – I am aware that a good many men don't like the way software is going, and barring you from membership would be doing exactly what the industry is doing to women – in fact we have a large number of male members.

Anyone interested to know more about OASIS should write enclosing an SAE to Sandra Vogel, 3 Alden Court, Stanley Road, Wimbledon, London, SW19 8RD.

Sandra Vogel, OASIS

✓ *Good luck, Sandra. You have an uphill struggle ahead of you.*

MONUMENTAL FEAT

I write with corrections to a piece in 'Tech Tips' – preview issue (bundled free with ACE). You managed a monumental feat of getting all your tips for the 68000 instruction set inaccurate or downright incorrect!

More research next time – you are only adding confusion.

Simon O'Leary, Sheffield

PS Good first issue. I dumped PCW back in June but your mag seems to be able to fill that weekly gap!!

✓ *Absolutely right about the cock up Simon and thanks for the detailed corrections you supplied – but I think it's safer just to say to anyone still baffled, forget the whole thing. We erred. Goofed. Bungled. Mis-fired. Screwed up. Mis-communicated. Printed garbage. Passed on falsehoods.*

Ignore that snippet in its entirety. Delete it from your copy. We've failed. Four members of staff have been fired and the rest are being sent on three hours' hard physical work.

Thank goodness it was only the preview issue. There were NO mistakes whatsoever in issue 1. Except that we said The Mars Saga was from US Gold instead of from Electronic Arts. Oh, and that Amstrad's PC2086 is a 286 PC. Not to mention ... aaaaaaargh!

COMPUTER EXPRESS ISSUE 2
Garrett.

"HMMM... FAR BETTER THAN IT USED TO BE..."

THANKS. HOWEVER...

Thanks for the great review of Pioneer Plague *(preview issue)*. It seems however your reviewer missed a whole mega portion of the game. A major feature for the player is programming drones to act aggressively or defensively, on or off screen. There are 5 types available.

These programs can be saved and used again. Drones can be used to collect fuel, destroy minefields, guard the Mother ship and so on. You make no mention of the Star Cluster maps and the use of the screen overlays. These again are vital to getting to the real depth of the game.

The game is intelligent and learns your patterns, then it gets mean...and fast...as the game levels unfold you find a story developing as the colonists prepare to leave the homebase. A good test of your drone programming and play ability is whether you are using the keyboard at the same time as the mouse!

Peter Holme, Mandarin Software

✓ *He only did it to give you a free second opportunity to plug your game, Peter.*

THE LASER IS WORTH IT

An interesting new magazine from a publishing house I trust to deliver high quality material (except *ST Amiga Format.*) However I shall wait a few issues before taking a subscription in case game reviews take over.

I would like to take to task the advice in Tech Tips to forget the ST Mega and laser printer and to use a typesetting agency for off-site laser setting. I have recently upgraded to this equipment and not only is the Atari laser worth its money, but it is very cheap to run and provides genuine near-typeset copy. I have managed to earn half the cost of the complete system in one job alone and work for the laser is pouring in.

The public can seldom tell the difference between typesetting and laser setting. It appears that many adverts in your magazine are laser set. Most people are satisfied with the Times or Helvetica typefaces supplied as standard with many WP and DTP programs, especially when you tell them the difference in price between laser and typesetting. Typesetters take time and money to set your copy and either want complicated codes added to the copy to produce a galley (needing paste-up) or need a PostScript file to read. The Atari (or other) laser printer is fast, on-site, cheap and gives the user total control over the work in progress.

And you neglect to mention that having a laser printer can generate work that would otherwise go elsewhere or not be done at all. Customers are amazed as you change the style and drag the layout of their work about with just a click of a mouse's tail. When it is to *their* satisfaction the laser produces the finished copy in seconds.

Mark Tennent, Hove, Sussex

✗ *No one here doubts that laser printers are wonderful things – we've got four of them. The point was simply that unless you have lots of regular output, the money could be better spent elsewhere.*

The editor of ST Amiga Format also had a message for you, but we censored it.

WE'RE THE SKODAS

Thank you for a computer mag that acknowledges that there a lot of people out here who own Spectrums. I have got totally fed up with your main rival's 70p-a-week effort which seems to think that only the Atari ST or Amiga are worth writing about. I admit we are the Skoda owners of the computer world, but we are still a sizeable market.

Don Griffith, Hammersmith, London

✓ *If you're the Skodas, who are the Reliant Robins? Answers on a postcard...*

MMMMMM....MSX

I am just writing to thank you for supporting the MSX machine. Other people think it is dead, but with the games being churned out by new companies and the support of your magazine, it is being revived.

Tell Keith Neal to keep up the excellent work – you couldn't have picked a better person to do the column.

Kevin McGahon, Belfast

✓ *How much did he pay you, Kevin?*

YES, HE'S BONKERS

Congratulations on a great new weekly! Express definitely fills a gap that's been around for a few year. Okay that's enough sycophantic stuff (I know you'll get plenty of that anyway). Now for my sage advice and criticism!!?

1. DO NOT go the way of certain other computer weeklies that were once 'popular' with me. Too many other magazines have started off as a balanced mix of technical articles, news and reviews and ended up as a games review vehicle. There's more than enough of those already! Your first edition managed the balance between games and technology very nicely.

2. Yes, Alan Sugar is completely bonkers for doing to the Spectrum what he should be doing to his wife! The Spectrum is still a great machine. (And that comes from someone who works on Apollo workstations and mainframes).

3. The article on PC graphics was great. However, I would have liked a mention of PGA. I'm still not sure where it stands compared to VGA. Particularly, does VGA have inbuilt graphics functions like PGA? Should I care? Incidentally, I haven't yet found a naughty word which fits '(%xs!'). Perhaps I'm too sweet and innocent.

4. Re BASIC Reborn. Yes, you can write bad code in Pascal but you have to work hard at it. BASIC doesn't encourage good programming style, which is okay at home but should not be tolerated at school. I had a definite advantage in the first year of my Computer Science degree because I had, unlike most, programmed in a true procedural language before. BASIC is fine as far as it goes, but no amount of revamping will ever make up for its poor underlying philosophy. Having said all that, I still have yet to see a good, all purpose, declarative or procedural language.

5. GEM does some whizzo things, but it's still a pain. When is someone going to come up with a truly usable front end?

6. Why was half of the SPEX column devoted to a single game, ie R-Type. Wouldn't something like, "A truly mega, awesome game. See ACE December issue for a full review" have been a little more economical. (Okay, maybe too economical, but you get the idea)

Kit Lane, Leicester

✓ *1. No, we won't.*
2. You rude boy, you.
3. PGA (Professional Graphics Adaptor) was an IBM superset of EGA which never really caught on. No, VGA doesn't have PGA's in-built graphics capabilities. (%x$! stood for 'silly', the worst 5-letter swear word anyone here knows.
4. Well, up to a point.
5. Microsoft has been trying (and failing) for the last two years with Presentation Manager. Maybe you should buy an Apple Mac.
6. Because the poor chap only had 24-hours to write the first column.Not everyone dislikes games, you know. Anyway, you've done enough to win this week's mystery prize, I reach into the sack and pull out – oh dear, it's a game. A compilation of 10 Great Games, in fact. That'll learn you.

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We proudly present the complete guide to choosing the machine that's right for you.

Which Computer?

The worst thing in the world is to spend £500 on a gleaming new piece of kit only to realise a week later that you goofed. Tracking down the right computer is a process fraught with hazards, but you can avoid 90% of them by looking carefully at the next five pages.

Most people should make their choice from one of six different machine ranges. We present a detailed look at each of the six, listing all their main advantages and drawbacks.

If that doesn't settle your choice, look carefully at the big software ratings box on page 20. So long as you select a machine which rates well in the areas you are most interested in you won't go far wrong.

One thing you mustn't do is simply walk into a high-street shop with a blank cheque and expect to be given reliable advice – our visits to local shops suggests strongly you could be seriously misadvised. Specialist computer stores would be a better bet, and there is certainly a lot to be said for seeing the machines in action.

START HERE ☞

Begin by asking yourself two fundamental questions:

1. How much can you afford to spend?

If it's less than £200 your choice is immediately limited to one of the older '8-bit' computers (see the 'Jargon-Buster' box for an explanation of '8-bit' and other terms.) such as the Sinclair Spectrum or Commodore 64.

But do remember to check what you're getting. For example, the Amstrad CPC range cost substantially more than the equivalent Sinclair models but include a bundled monitor which accounts for most of the difference.

2. What would be your main use for it?

If it's primarily business use, you will almost certainly be best off with a PC.

If games are your main aim – and price is no object – you should probably choose between the ST and Amiga.

If, like most people, you want to do a range of things on it your first task is to try to put them in order of priority.

☞

JARGON-BUSTER

Here are brief definitions of some of the more common technical terms you'll be up against.

HARDWARE: The computer itself: keyboard, monitor, circuitry, etc.

SOFTWARE: Programs which control what a computer does. A game or word-processor you buy in a shop is software.

RAM: The memory used by a computer to store programs loaded into it from disk or tape or typed in from the keyboard. The greater the amount of RAM (measured in kiloBytes ('K') the bigger the programs your computer can run.

ROM: 'Read Only Memory'. Contains programs stored permanently by the computer. Many of today's computers have very little ROM, preferring to load in even their basic operating programs from disk.

BYTE: The basic measure of memory. One byte can store a single letter of the alphabet or number up to 256. 1024 bytes make a kiloByte (abbreviated to 'K'). So a 512K RAM computer has 524,288 bytes of RAM memory.

CENTRAL PROCESSOR: The microchip at the heart of a computer which determines to a considerable degree the machine's power. Also known as CPU (Central Processing Unit).

8-BIT/16-BIT: Describes particular types of central processors according to how much information they can process at once. A 16-bit processor (such as the Intel 8086) can process twice as much information in a single step, giving it far greater power than 8-bit chips (such as a Z80 or 6502)

THE SIX MAIN OPTIONS:

Sinclair Spectrum

MODEL Plus 2 • £139.99
What you get Keyboard, built-in tape deck, TV connector, joystick, selection of software.
MODEL Plus 3 • £199.99
What you get Keyboard, built-in disk drive, TV connector, joystick, selection of software.

Hardware Advantages

- The Spectrum is one of the cheapest micros around.
- Built-in tape deck or disk drive as standard.
- 128k of RAM.
- Built-in MIDI socket.

Hardware Disadvantages

- Poor quality TV display.
- Limited range of colours – maximum of 8, from a palette of 8.
- Attribute Problem – term used for graphical objects changing colour as they move around the screen, because of the limitation of only 2 colours allowable in any 8x8 pixel square.
- No graphics hardware facilities for sprites or scrolling – software has to emulate these functions thus slowing down their execution speed.
- Barely adequate sound capability.
- Non-standard joystick ports – you'll have to buy special joysticks or an interface (costing around £10) which allows you to use normal joysticks.
- MIDI socket is non-standard.

Software Advantages

- One of the largest selections of games software for any micro.
- Games software is very cheap – ranging from approximately £2 to £12 on tape (normal price is £9 tape/£12 disk).
- Majority of games titles released on Spectrum format.
- Supplied with easy to use BASIC.

Software Disadvantages

- The range of software is, on the whole, limited to games.
- Lack of dedicated graphics hardware places constraints on the type of games implemented, e.g. small area of screen used for animation, mono-colour screen layout and relatively slow speed.
- Versions of games titles tend to be the worse of all the micro formats in terms of audio-visual quality.
- All the advantages of 128k of RAM are not used, because software companies want to maintain compatibility with previous models, i.e. many games titles only use 48k of RAM.

What does the future hold?

Despite the increasing popularity of 16-bit machines, the Spectrum still attracts healthy support from the games software companies, and is too popular to go away overnight – but as 16-bit software improves, the Spectrum is finding it increasingly difficult to seriously compete. Therefore games software support is likely to dramatically tail-off within the next two years.

Who is it for?

The Spectrum is still a great little machine for first-time buyers with a limited budget. The games software is cheap and there's plenty of it, most of it within the limits of kids' pocket money.

Commodore 64

PACKAGE 1 Hollywood Pack • £149.99
What you get C64C, C2N tape deck, joystick, selection of film/TV tie-in software.
PACKAGE 2 Home Entertainment Pack • £199.99
What you get C64C, C2N tape deck, joystick, Bush personal stereo, Yamaha electronic keyboard, bundled software.

Hardware Advantages

- The C64 is the most popular micro in the world, with over three million units sold worldwide.
- Tape deck now included in package.
- Dedicated graphics hardware facilities for sprites and scrolling – allowing smooth and fast animation of graphics objects.
- Easily the best sound performance from any 8-bit micro.

Hardware Disadvantages

- Tape deck is very slow – fortunately software companies now employ 'Turbo Loaders', which decrease the time spent loading.
- Disk drive is expensive, slow and noisy – 'Turbo Loaders' help with speed problems, though.
- Limited colour range – maximum of 4 colours within any 8x8 pixel square, out of a palette of 16.
- Using the maximum of colours places restrictions on graphics' horizontal resolution, making graphic objects appear blocky.
- Serial port is non-standard – interfaces (costing around £20) have to be purchased in order to use non-Commodore printers.

Software Advantages

- Excellent selection of software – mainly games and programming utilities.
- Software not only produced in the UK, but USA and Germany as well, providing a wide variety of software.
- Games usually the best conversions out of all the 8-bits.

Software Disadvantages

- BASIC supplied is the worst on any micro.
- Games software is usually £1 dearer than Spectrum counterparts, normal price is £10 tape/£15 disk.
- Only 64k memory means many games have to be multi-loaded (the program is divided into various parts, with each section loading in separately) – which can be very annoying.
- Relatively few non-leisure titles available, and those that are, appear primitive in comparison to their 16-bit counterparts.
- Processor-intensive software such as solid 3D games run very slowly, due to the slow clock-rate of the C64's CPU.

What does the future hold?

As with the other 8-bits, the C64 is starting to look a bit dated against the 16-bit micros, but it can often still more than hold its own. It may well be the best-supported 8-bit in 1989-90.

Who is it for?

For most entertainment usage, the C64 easily surpasses the 8-bit competition in terms of software and hardware capabilities. So long as you don't want to put it to much serious use, the C64 is probably the best 8-bit to go fo.

Amstrad CPC

MODEL CPC 464•£399
What you get Keyboard, built-in tape deck, colour monitor, TV tuner, radio alarm clock, desk, joystick, compilation of 17 games titles.
MODEL CPC 6128•£499
What you get Keyboard, built-in disk drive, colour monitor, TV tuner, radio alarm clock, desk, joystick, compilation of 17 games titles.

Hardware Advantages

- The Amstrad CPC packages contain the biggest selection of micro-bundled 'goodies'.
- Built-in tape deck or disk drive as standard.
- Colour monitor as standard.
- CPC 6128 has 128k of RAM.
- Disk drive is fast and reliable.
- Best 8-bit colour range – max 16 on screen out of a palette of 27.
- Good range of expansion ports for printers, disk drives, etc.
- Finest 8-bit keyboard – good for word processing.

Hardware Disadvantages

- Tape deck is only reasonably fast and reliable.
- Disk drive uses expensive 3 inch disks.
- Using maximum range of colours produces a similar effect to the C64 problem of 'blocky' looking graphics.
- No graphics hardware facilities for sprites or scrolling.
- Sound chip is basically the same model as the Spectrum's, albeit with (very) rudimentary stereo capability.

Software Advantages

- Extended colour palette can produce the most colourful 8-bit version when used correctly by the software companies.
- BASIC supplied is second only to the BBC B's in the 8-bit field.
- Substantial range of games and business titles, although not as extensive a games selection as the Spectrum or C64.
- Excellent word-processors available (eg. *Protext*).

Software Disadvantages

- Many software companies now declare CPC sales of their products to be too low, and so they convert only major titles from the C64 and Spectrum to the CPC.
- Lack of dedicated graphics hardware produces more profound problems than their absence in the Spectrum – with CPC games running much slower than their C64 and Spectrum partners.

What does the future hold?

Of the 8-bit machines mentioned in this survey, the CPC is the one likely to lose most software support over the next two years – with the Spectrum and C64 receiving priority because of their superiority in terms of 8-bit games sales figures. However the machine still has a very loyal user base, and some non-games companies promise continued long-term support.

Who is it for?

The CPC machines offer the best value for money – on a hardware basis – out of any of the micros surveyed, but this is counterbalanced by their escalating lack of support from games software companies. If games are your main ambition you'll do better elsewhere. But if you want a good value package on which you can word-process, program and have a lot of fun, it's not a bad bet.

PROS AND CONS

Atari ST

MODEL 520 STFM • £299.99
What you get Computer with disk drive + mouse. Plugs into your TV (or buy separate monitor.)
BUNDLE OPTION. ST Superpack • £399.99
What you get All the above, plus joystick, 21 games and a business software package.

Hardware Advantages

- Fast Motorola 68000 16-bit CPU.
- Built-in disk drive.
- 512k of RAM.
- Good screen resolution - high res=640x400 (mono), medium res=640x200 (4 colours) and low res=320x200 (16 colours).
- Great range of colours – maximum of 16, out of a palette of 512.
- MIDI port as standard.
- First-class keyboard – great for word processing.
- Excellent selection of expansion ports for monitors, extra disk drives, printers, modems, hard disks, etc.

Hardware Disadvantages

- Lack of dedicated graphics hardware for sprites and scrolling – while not as an acute a problem as their lack on the 8-bits, software still has to emulate these functions using up valuable processor time.
- Sound chip is poor, being a similar model to the one used on the Spectrum and Amstrad, thus totally inferior to the Amiga and even the C64's sound chip.
- Falls short of the Amiga in raw graphics power.

Software Advantages

- Built-in, easy to use, WIMP environment.
- Good range of games, hobby and (to lesser extent) business software available - but still not as extensive as the Spectrum and C64 for games, and way short of PC for business titles.
- ST versions of games titles far superior to the 8-bit versions, in terms of audio-visual quality.
- Built-in MIDI port has prompted software companies to produce a variety of music packages for the ST, making it the number one choice for musicians.

Software Disadvantages

- Software is very expensive - games titles range from £10 to £25 (normal price is £20).
- Version of BASIC supplied is terrible - extremely slow, difficult to use and bug-ridden.
- Although there was a steady release of business software when the ST was launched, that has now gradually disappeared.

What does the future hold?

As far as games are concerned, the future belongs to the ST and Amiga. There should be a steady increase in games software support over the next three years at least. The ST is also attracting plenty of hobbyist applications, especially in music, but its future on the business side is less certain.

Who is it for?

The ST is a wonderful combination of high-power and low price. It currently has a distinct lead over the Amiga in terms of software support in the UK which in practice more than makes up for its slight technical inferiority. A powerful, versatile computer which can appeal to a very wide range of people.

Commodore Amiga

MODEL A500• £399.99
What you get Computer keyboard with built in disk drive, mouse, TV modulator

Hardware Advantages

- Fast Motorola 68000 16-bit CPU.
- Built-in disk drive.
- 512k of RAM.
- Brilliant screen resolution – a myriad of different screen modes, with the normal one being 320x256 (32 colours).
- Superb range of colours – up to 4096 on screen.
- Superb stereo sound chip.
- Dedicated graphics hardware for sprites and scrolling.
- Built-in blitter to speed up graphics animations.
- Good-quality keyboard.
- Excellent selection of expansion ports for monitors, extra disk drives, printers, modems, hard disks, etc.
- Has the option for a Genlock device which allows you to mix video images and Amiga graphics.

Hardware Disadvantages

- Disk drive is slow, noisy and sometimes unreliable.
- Power switch is separated from the keyboard in a separate power supply (extra clutter!)

Software Advantages

- Growing range of games, programming and graphics software available
- The Amiga versions of games titles usually far superior to the 8-bit versions, in terms of audio-visual quality – can also be superior to ST versions.
- The Amiga has quickly achieved the top spot for graphics applications, with even professional studios using the Amiga to produce displays for TV shows like C4's *Network 7* and *The Chart Show*.
- Good version of BASIC supplied.

Software Disadvantages

- Software is very expensive – typically £25 for a game.
- Most games titles, when converted over from other machines, don't use the extra graphics and sound capabilities to the full.
- Not many business software titles available.
- WIMP environment and operating system are very awkward and slow to use – with part of it having to be loaded in from disk every time you reset the machine.

What does the future hold?

As with the other 16-bits, the Amiga is taking an increasing bite of the games software market. Despite Commodore promoting the Amiga as a business micro, there have been relatively few business titles released so far, with this situation unlikely to change dramatically. The Amiga has achieved cult status among software designers around the world, especially in USA and Germany – with many programming and graphics utilities available now, and more on their way.

Who is it for?

The Amiga was originally designed as, and currently is, the ultimate games micro – its superlative audio-visual capabilities haven't even begun to be stretched yet. If you want the the extra facilities, and can afford the asking price, the Amiga is definitely the machine to go for.

PC Compatibles

MODEL Amstrad PC 1640SD mono • £574
What you get 640K computer with single 5.25" disk drive, keyboard, mono monitor, mouse
MODEL Amstrad PC 1640DD CGA • £919
What you get 640K computer with twin disk drives, keyboard, colour (CGA standard) monitor, mouse.

Hardware Advantages

- IBM-PC compatible.
- Built-in disk drives to suit your needs (and price bracket!)
- 640K of RAM enough for many business needs.
- Ready expandability through standard internal expansion slots
- Good quality keyboard, perfect for word processing.
- Very wide range of add-on devices, eg hard disks, available at very competitive prices.

Hardware Disadvantages

- Cheaper versions limited to mono display.
- CGA display has only 4 colours available on a 320x200 screen. Poor for games and not ideal for word-processing.
- Location of power supply in monitor limits upgrade flexibility.
- Sound consists of beeps from a built-in speaker.

Software Advantages

- Massive base of high-quality business software.
- Specialist applications to suit almost ever need.
- Continued support assured because of the size of the PC user base.
- Increasing number of entertainment releases in UK.

Software Disadvantages

- Games software is audio-visually inferior to many 8-bit titles, let alone the ST or Amiga.
- And is expensive – typically £25.
- Some specialist applications, especially involving high-resolution colour graphics, would work better on other machines.

What does the future hold?

The PC format is here to stay – by buying an 'industry standard' machine you virtually guarantee that you won't be left in the lurch in the forseeable future. However, the state-of-the-art PCs are now substantially more powerful and applications developed specially for these will not be suitable for use on a 1640.

Who is it for?

IBM PC-compatibles are the only micros worth considering for any serious business use, and the Amstrad PC1640 range represent a very good compromise between price and features.

If you want to make money out of your computer and don't mind missing out a little bit on state-of-the-art entertainment, one of these is probably your best bet

Other models

There are literally hundreds of different PC models on the market, starting from £343 (the Sinclair PC200) and ranging up to £5000 and beyond. The main factors which affect the price are the processing power (ie speed) of the machine, its disk storage system and its display quality. You have to define your needs and your budget and then make your choice

☞ Continued from previous page

ASTONISHING advice from the high-street

Most people in search of a computer take the obvious step of a visit to one of the high-street stores in search of advice. So we decided to do the same and despatched intrepid reporter ANDY STORER, kitted out with hidden tape-recorder, to the Bristol branches of Dixons, Laskys, Comet and Boots.

Not ALL the advice he received was awful, not ALL the salespeople in the shops he visited will have been this bad, and not ALL branches of these shops will be the same.

But nevertheless he heard enough to suggest that a high-street shop is not guaranteed to be the best place to go to for advice.

Here follow the edited low-lights together with our margin comments.

BOOTS "16-bit means the edges are rounded off"

So what does 16-bit mean?
Well this (Nintendo games console) is an 8-bit which means there's 8 bits for every character on screen – if it's a 16-bit it means that all the edges of onscreen characters are rounded off because it's twice as defined again, so the graphics are absolutely superb. It means it's twice the capability of any 8 bit machine really – twice as fast, more memory.

Confusion, alas, between graphic resolution and processing power...

Are there any plans to have anything more educational on the Nintendo?
There's a limit to how far it can go – it'll have to use the joypads and the guns. Unless Nintendo invent a keyboard to go into the joystick then they could start bringing out educational software for it – there's absolutely no reason they couldn't – one disadvantage though would be that there's no way you could store what you write.

Which being translated is 'No'.

How many colours does it have?
I think there's 128 – just basic shades of your basic colours.

Er, make that 52.

LASKY'S "You can tip cups of coffee on them"

Is there a lot of software for the Commodore 64 then?
Yes, there's loads – and then you can run Vic 20 games on it too – you can use any Commodore games as long as they're lower than 64.

Totally, utterly wrong apart from the first three words.

What's that port for on the back?
That's so you can plug in a 64-bit expansion.

A WHAT?!

On the Amiga here, what do you use the mouse for?
It's just for graphic designs, broad sheets, if you want to change to a certain page say.

Er, shouldn't that be 'spreadsheets'?

What's multi-tasking then?
High-speed multi-tasking is just your actual loading up of software on the disk drive. It actually loads quicker.

It's nothing to do with disk loading.

Can you get bigger disks?
Yes, there's the 5 inch ones for business.

Rapidly being replaced by 3.5inch disks.

Do they contain more?
Yes, it all depends – they will hold a lot more.

Wrong! They normally hold a lot less.

So is it better to buy a monitor then?
Well, if you already have a colour TV you can just say run the video on Channel 12 and run the computer on Channel 11. You get a better reception and clearer graphics. But you can buy a colour monitor if you want to – just for the better system.

Eh?

Do they (Commodores) go wrong very often?
Very , very rarely – not at all.

Except for mine and my brother's.

Can you run business software on the Amstrad CPC?
Yes, you can but if you want both business and games you need a very large system that will take both – like the Commodore Amiga – it has a large enough memory to take business software.

True – it's just that not much business software exists for it.

How many colours do you need?
There's the whole spectrum of colours on a Commodore.

Great pun! Better than Dixons.

Are the Commodores likely to go wrong then?
You can tip cups of coffee on them – they're virtually idiot proof.

Whaaaaat?! This will wreck any keyboard, and coffee on a monitor could kill you!

DIXONS Buisness Centre "Amstrads wear out..."

Is it best to go with IBM?
Well, it depends how much you want to use it – if you use it 8 hours a day five days a week – then it'll last five years whereas an Amstrad will have worn out by then – we're talking build quality here.

Alan Sugar won't like that one bit!

What do you suggest then?
Iit all depends on what you want to use it for – the software is far more important than the machine. Decide the programs you want to run and then choose a machine to run them on.

Very good point. Well done.

What's the best way to decide on which computer to buy?
Well it's entirely up to what you want – it's best to sit down and write a list of all the things that you're doing manually at the moment that are a total drag and you want a computer to do.

Such as the washing up?

So if I want a computer for a long time, I'd be better off buying an IBM than an Amstrad PC?
Of course .. it's like buying a car, you can buy a Ford Escort or a BMW – you can guess which is going to last longest – at the end of the day they both take you from A to B. But in 5 years time IBM will still be going strong and you'll be able to get parts – with Amstrad you get what you pay for – with IBM you can resell for 40% of the original value.

In fact there are plenty of PCs as reliable as an IBM but cheaper. You pay for the name.

So are Amstrads unreliable?
No, they're very reliable – but you get what you pay for. On the whole – considering the amount they sell – they're very reliable.

Back-handed compliment, or what?

DIXONS "Business software on cassette"

What is K?
K is an expression of memory usually expressed as RAM – IK will usually give you 3 pages of A4 – so on a Spectrum Plus 2 128K will surely be enough. When you load a game system in it only takes a 1/4 of memory so the rest is up to you.

When used to store text, 1K is about 170 words – less than one sheet of A4 on our printer.

What's the benefit of having a disk drive?
It's faster and it's more of a world standard – most word processors use discs, IBM use it ... for future expansion disk is it!

Sort of...

Would you recommend a PCW for a child?
Not really, they'd just be too dazzled by the keyboard – whereas on the Plus 2 all the functions are simple.

Relatively speaking...

Does the Plus 2 have many colours then?
Oh yes! there's 16 shades of colours – so if you hook it into your TV at home – you'll get the full scope of colours.

The full *Spectrum* of colours, man.

Can you get more serious software for the Plus 2 then?
It's limited because cassettes for business systems aren't that readily available.

True.

But there are some are there?
Oh yes.... absolutely.

And all at least 3 years old..

COMET "You can't link it to a telephone"

Are the Amstrad CPCs good machines?
Yes, you can get everything for them – you can add -on to them, you can expand them to their full potential – they're not just there you can expand them on for ever more in time.

Until support dries up from them...in a year or two?

How can you expand them?
Disk drives, second disk drives, printers – to its full potential – it's not just a computer – you can take it much further than that.

By spending more money with us!

So can you link them up to telephones then?
Nothing that far ahead, no.

Not heard of a modem?

So what's this new Sinclair PC200?
Well, we don't know too much about it – it's just on the market – it's more of a business machine though you can get games for it.

Hardly an ideal business machine.

You say it's IBM compatible, what does that mean?
Well, you can just transfer IBM programs and run them on this computer – it's a form of software.

Eh?

Can you run it on a telly?
No, it has to be run onto a monitor – there are the right connections to go to a television but with the graphics you'll lose a lot out if you want to put it onto a normal television.

The PC200 has been designed specifically for TV use.

Is there much difference between the games on this and other Amstrads then?
Oh yeah, they're much better on this one.

Except there's only four colours!

Can you expand this one as well?
I don't know – it's new to us at the moment.

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So the single most important thing for you to establish is whether the computer you're considering has in existence a wide range of the right kind of programs, and whether new programs will continue to be produced for it.

For both these reasons you should study this table very carefully. It breaks down software into four main types (with 'hobby' including art, music, and other non-game leisure programs.)

	SOFTWARE QUALITY				SOFTWARE QUANTITY				SOFTWARE PROSPECTS				FRIENDLY
	GAMES	*HOBBY*	*WP*	*BUSINESS*	*GAMES*	*HOBBY*	*WP*	*BUSINESS*	*GAMES*	*HOBBY*	*WP*	*BUSINESS*	PRICES
SPECTRUM	●●●	●●	●	●	●●●●●	●●	●	●	●●●	●	●	●	●●●●●
COMMODORE 64	●●●●	●●●●	●●	●	●●●●●	●●●●●	●	●	●●●●	●●	●	●	●●●●
AMSTRAD CPC	●●●	●●	●●●	●●	●●●	●●●	●●●	●●	●●	●●	●	●	●●●●
ATARI SY	●●●●●	●●●●●	●●●●	●●●●	●●●●	●●●	●●●●	●●●	●●●●●	●●●●●	●●●	●●	●●●
AMIGA	●●●●●	●●●●●	●●●	●●●	●●●	●●●●	●●●	●●	●●●●●	●●●●●	●●●	●●	●●
PC COMPATIBLES	●●	●●●	●●●●●	●●●●●	●●●	●●●●●	●●●●●	●●●●●	●●●●	●●●●●	●●●●●	●●●●●	●●

The other options

Although most buyers will want to opt for one of the six models featured on the previous pages, there are other very good buys for people with specific needs.

PORTABLE COMPUTING

Look hard at the **Sinclair Z88** lap-held, or (if you can afford it) one of the **Toshiba** lap-held PCs.

WORD-PROCESSING

If this is your main requirement you should consider an **Amstrad PCW**. The 8256 model costs just £349 + VAT and includes mono monitor and printer. Great value!

EDUCATION

Acorn's overpriced **BBC micro** still dominates the education market. If you're buying purely to buy your kids educational programs, this one will give you the most options.

DESK-TOP PUBLISHING

Although there is good software now for PCs, STs and Amigas, the market leader is still the **Apple Macintosh**. Buy a colour Apple Mac 2, a PostScript laser printer and Quark Express layout software (total bill some £10,000) and you can start your own publishing business! (Express, by the way, is laid out entirely on Macintoshes.)

TECHNO JUNKIES

If your only desire is to have state-of-the-art hardware you could spend £800+ on an **Acorn Archimedes**. There's very little software for it but its central processor sure is hot stuff!

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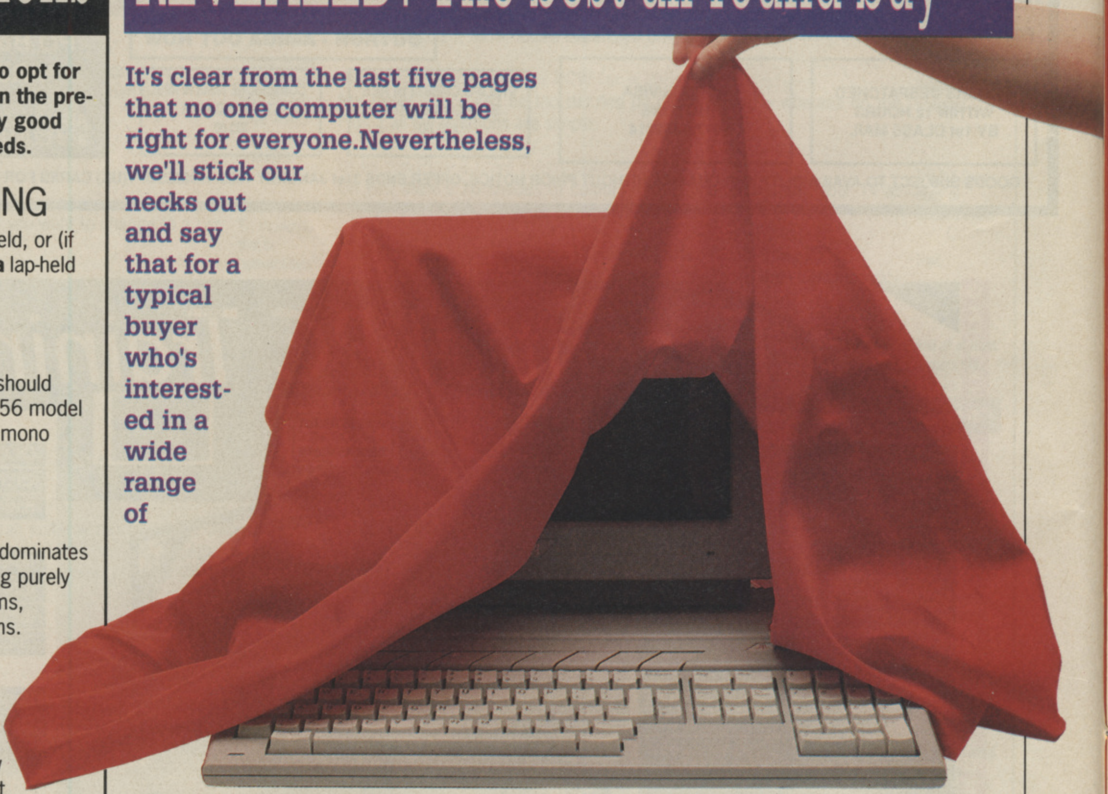

It's clear from the last five pages that no one computer will be right for everyone. Nevertheless, we'll stick our necks out and say that for a typical buyer who's interested in a wide range of uses for the machine – including games, graphics, music and word-processing – the best value computer to go for this Christmas is ... the Atari ST!

Prices start at £299 for the basic model, although to get the most out of the machine you should double that budget and include a colour monitor.

It's a great-value machine and though technically inferior to the Amiga in some respects, it is less quirky and, in Britain at any rate, better supported.

Buy one now and you can expect several years of exciting computing ahead of you.

PS. Angry letters denouncing this choice and extolling your machine should be addressed to:
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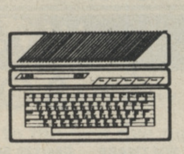

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2. Are you:

(A) ☐Male (B) ☐Female

3. Which computer(s) do you own?

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(D) ☐Atari ST (E) ☐Amiga (F) ☐BBC
(G) ☐MSX (H) ☐QL (I) ☐PCW (J) ☐Z88
(K) ☐ PC clone

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(I) Daisywheel	☐Own	☐Intend to Buy
(J) Laser printer	☐Own	☐Intend to Buy

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5. What software are you interested in? (tick up to five)

(A) ☐Budget games
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8. Please rate the features in this week's issue out of 10:

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☐ (G) Sample copy with PC Plus
☐ (H) Just saw it on news-stand
☐ (I) Word of mouth
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10. Which areas would you like to see New Computer Express covering in the future? How can the magazine be improved in general?

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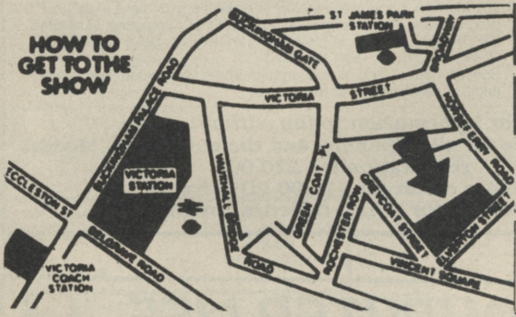

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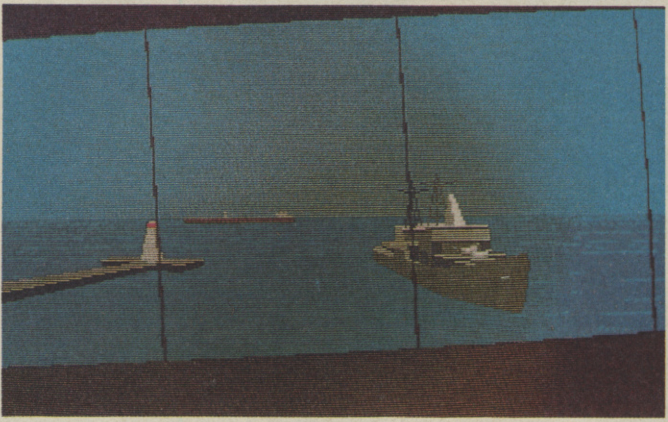
SOFTWARE INVASION!

Loads of software from across the Channel this week – but then we are in Europe after all. Meanwhile, some home-grown contenders jostle for the Christmas top spot on Page 26

GREMLIN'S GERMAN CONNECTION



• USS John Young (Amiga)

Gremlin Graphics have announced they are to market and distribute seven titles to be released over the next six months by software producer Micro-Partner on its Magic Bytes label. Pink Panther is perhaps the West German company's best known product to date, despite disappointing sales after a two month delay in release earlier this year. Of the new titles, USS John Young and Persian Gulf Inferno look most likely to make amends.

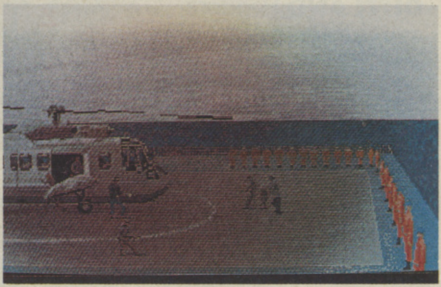
Available on Amiga, ST and C64 in April, USS John Young puts you in command of a US navy destroyer embroiled in a future Superpower conflict over the Middle East. The tasks awaiting you include convoy escort, sub hunting, shore bombardment, rescue missions and direct confrontations with Iranian and Soviet forces.

Persian Gulf Inferno, due out in June on the same formats, appears to take the same scenario further. Here you're the only survivor of an anti-terror squad dispatched to free 5 hostages and defuse a 1-megaton nuclear bomb about to blow on an oil rig. In this platform shoot-em-up of 200 screens, you have thirty minutes to complete the job — a daunting mission, since there are hordes of terrorists that need to be disposed of along the way.

Wall Street offers conflict of a different kind, taking you into the hustle and bustle of high finance, where quick reactions and fearless risk-taking are also heavily in demand. Interestingly, the game allows you to file and update your real stock market portfolios with a password secured database, so it's no surprise this one will be out on the PC as well as Amiga, ST, C64 and CPC in April.

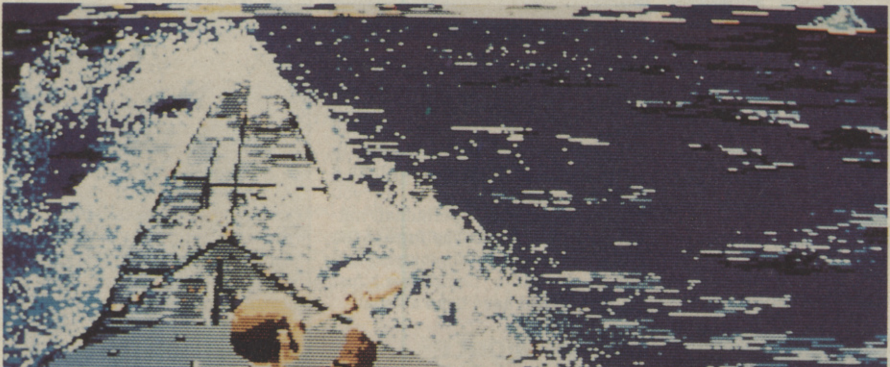
Sci-fi fans are also catered for with two releases available in February. Nightdawn, out on Amiga, ST and C64, finds you in the role of a Robotics Engineer controlling a remote explorer through alien worlds, whilst The Paranoia Complex, due on Amiga, St, C64, CPC and Spectrum, has you tracking down renegades in a computer-controlled underworld.

For lighter relief, Magic Bytes have set for February release Tom and Jerry; a two-player game based on the cartoon series, in which you get to play the part of the mouse – and, due out later this month – Minigolf, a four-player crazy golf sim featuring teleporter fields. Both will be available on Amiga, ST and C64 with Tom and Jerry also set for CPC and Spectrum.

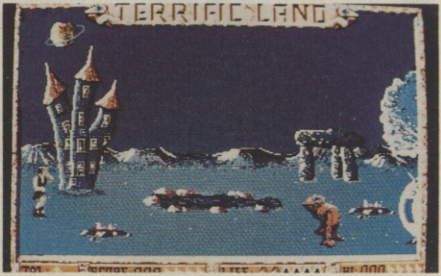


• Persian Gulf Inferno on the Amiga

SHOOT ALORS! ACTIVE'S COKTEL OF GAMES



• 20,000 Leagues Under (any minute now, presumably) The Sea

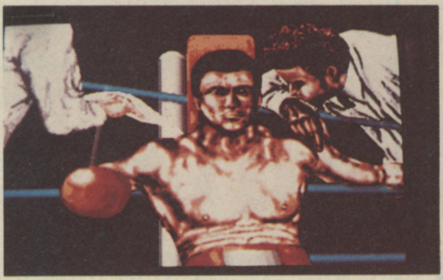


• Terrific land (house prices are mushrooming)

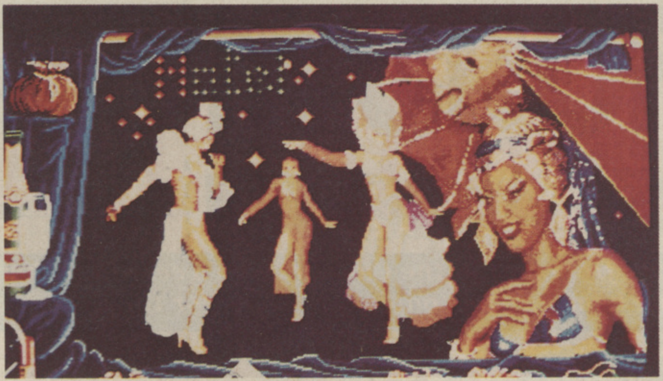
Active Distribution's recent signing of the marketing rights for a range of titles due out on Amiga, ST, PC and CPC from French software house Coktel Vision has led to them picking up the rights to Coktel's Walt Disney licence – *Jungle Book*. Hopefully out by Christmas, this arcade adventure will allow you to take the role of a number of the film's characters.

Other well known titles in the pipeline include *Peter Pan* and *Emanuelle* (that's two separate titles there!). The seventies' soaraway sexy sizzler doesn't feature scene after scene of monitor-misting mayhem, though –

☞



• Ringside' – 'it 'im while he's still sat down...



• Emmanuel – get ready for some wrist-intensive joystick action

there's only a couple of screens which could be described as...er...French... Most of the action takes place in the appropriately steamy climes of Brazil, where Emanuelle has gone missing. You have to go in and get her — a mission believed to feature furious wrist-intensive joystick action.

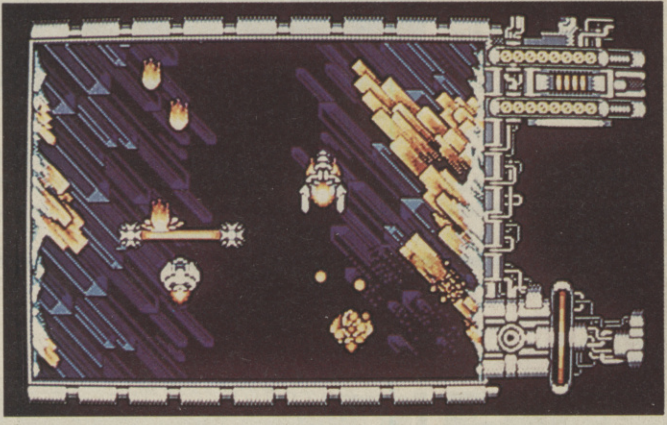
First off the line though is *Freedom*, for Amiga, ST, PC and CPC, a strategic role-playing war game set in an 18th century sugar-producing colony. And yep...you're a slave leader about to make an heroic escape. Close on its heels and on the same formats is *20,000 Leagues Under The Sea*; a sub-aquatic arcade adventure where escape and evasion is also the name of the game — this time it's Captain Nemo, sharks and squids you're up against. Finally, there's *Terrific Island*, a survival exercise where the aim is simply to stay alive in the face of monstrous odds.

Active are also releasing *Ringside*, from West German house E.A.S., later this month on the Amiga. This is a world championship boxing sim in which you have to punch your way through 10 opponents on the way to the top. Nice features include a human opponent mode so that two players can fight each other and the option to build your own opponent's characteristics.

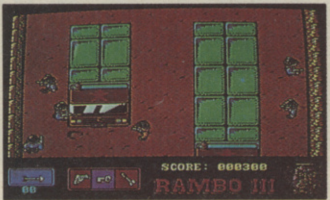
And on the Home Front...

OUTLAND Pandora

After discovering a rift in the space-time continuum, you find yourself in a MT-32R fighter thrown back in time just four hours before an attack on Earth. And it's two-plane vertical parallax scrolling shoot-em-up time with a host of bolt-on weaponry as you laser your way through 16 levels of alien defences. Featuring extended music for owners of DS drives and simultaneous two-player action, *Outland* will land your way on Amiga and ST any day now.



• Up against the Titan Battlestar on your ST



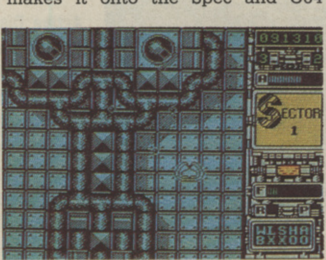
• Rambo rampages his way through the C64 in mid-November

RAMBO III Ocean

Hearing his long-lost boss has been abducted by Afghan commies, Rambo goes hay-wire in his usual unassuming way. This one finds you with knives, arrows, various guns and an overhead view of the action as you battle your way through a heavily-guarded fort to an awaiting tank. From there on in, it's down to defence as you drive your way through Soviet troops and choppers, dodging grenades and rockets in a bid for freedom.

XENON Melbourne House

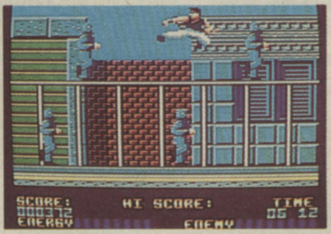
The definitive 16-bit vertical scroller makes it onto the Spec and C64 some six months after its original coin-op conversion. Fly your craft through 4 stages of alien territory as you try and destroy as much as possible by switching between ground and airborne vehicles. A fine balance between frustration and addiction makes up for a gameplay that has possibly seen its day, but the graphics and sound on hand will only help enhance playability even further.



• Looking for laser cannons in Speccy Xenon

DRAGON NINJA Imagine

If it had kept its original title, *Bad Dudes versus Dragon Ninja*, Imagine's latest would have won the Express Award For Coolest Title This Side Of Revenge Of The Mutant Hitlers. As it is, Imagine's martial arts kick-everything-to-death-em-up looks a tasty little number with its 8 levels of aggro-acrobatics as you take on numerous superhuman nutters in a bid to save The Pres of the U.S. of A. Complete the mission and he'll give you a hamburger. Just think – it could have been a kebab.

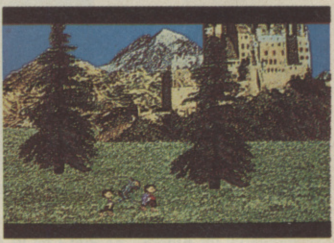


• A great way to get your kicks on a Speccy

WAR IN MIDDLE EARTH

Melbourne House

Based on Tolkein's classic, this multi-level action adventure is billed as including the whole of his panoramic vision as you follow in the footsteps of Frodo and Gandalf in their bid to get the Ring to the Cracks of Doom. The press release states that 'there are infinite possibilities...no two games will ever be the same', so it looks as though you're in for quite a quest if you buy this one. Virgin are tipping it as a major force in sales for Yuletide. Bet there's a fair amount of Forces to be found in the gameplay too.



• Off on the trail to Doom with an Amiga and a couple of friends

CAPTAIN FIZZ AND THE BLASTER-TRONS

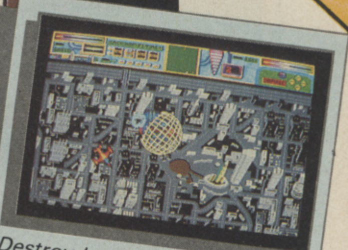
Psyclapse

Sneak Preview – so hot the screenshot melted (honest)

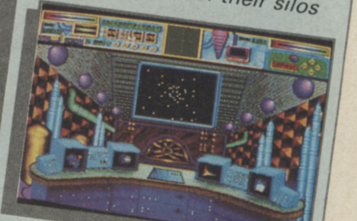
A two-player arcade maze game where the strategic action's so intense you'll actually need a friend to help you get through it. Available on the ST and Amiga in December, *Captain Fizz* features a huge labyrinth inside the silicon circuits of a master computer you have to close down. The screen is cut into two overhead views of the maze corresponding to each players' point of view so you have to split up and swap the various coloured cards allowing access through various gates. Coming out at £14.95, *Captain Fizz* also looks set to score in the price dept as well. We'll show you a screen shot as soon as they have one available.

The first Hold-and-Modify game for the Amiga – 4,096 on-screen colours!

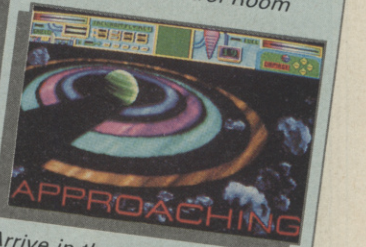
PIONEER PLAGUE



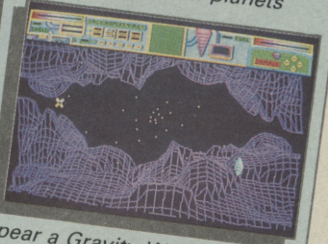
Destroy hostile probes as they rise up out of their silos



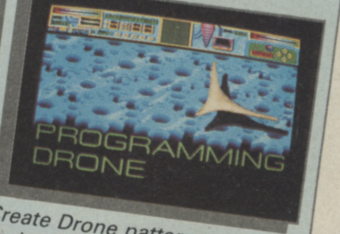
Choose your next course of action in the Control Room



Arrive in the nick of time at one of the infected planets



Spear a Gravity Well to escape from Sub-Euclidian Space



Create Drone patterns and save them onto disc

ONLY available on the Amiga: £24.95

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Awesome action for your Amiga!

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A624

Welcome to the New Computer Express games section, the liveliest, most up-to-the-minute reviews for miles. You'll notice that our reviews are laid out differently from run-of-the-mill computer mags. We

- use a simple, no-holds barred, no-fuss star rating system, where only the very best games get the coveted five-star rating.
- break up reviews into easily-digested sections relating to scenario, gameplay, graphics etc. – no more hunting to find out what you want to know.
- take version differences seriously. You'll always know what machine the game's being reviewed on, but we'll give you information about other versions too.
- give games of particular merit their very own box, together with a flash to say what's so good about them.

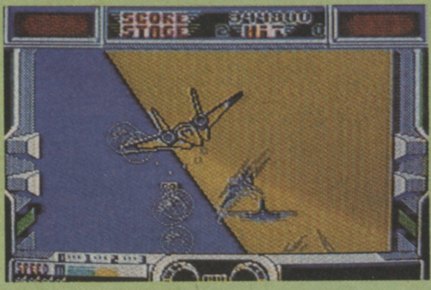
BATTLE OF THE BIG SEGA COIN OPS

AFTERBURNER

MEDIAGENIC

Spectrum • £9.99cs
Also on Sega console
Out soon on C64, CPC, ST, Amiga, PC, MSX

Sega's *Afterburner* has held the title of the best arcade game for quite some time (with the only contender being Sega's *Galaxy Force II*) – thanks to its superlative audio-visuals and air-sick inducing hydraulic cabinet. What the arcade version didn't have was gameplay – but with those incredible features, who cared?



• Missing those MiGs at mach 2

Now Mediagenic has bought the rights for the home computer conversions, and they're spending megabucks on promoting it (watch out for the TV adverts this month) – but have they spent any time and money on improving the gameplay?

● GAMEPLAY

Afterburner places you in control of an F-14 Thunder Cat fighter – assigned to wipe out all enemy forces over progressively more hostile territory. Armed only with 20mm cannon and guided missiles, it's a good job your fighter is such a manoeuvrable aircraft.

In play the action is an ongoing onslaught of obligatory obliteration – yeah, it's that boring! The same relentless gameplay is interspersed with momentary pauses for rearming/fuelling – then it's back to more of the same...

● GRAPHICS AND SOUND

Visuals are stunning – definition, animation and speed are almost faultless, considering the Spectrum's graphics limitations.

Audio is slightly less impressive, with only average soundtrack and sound effects.

● OTHER VERSIONS

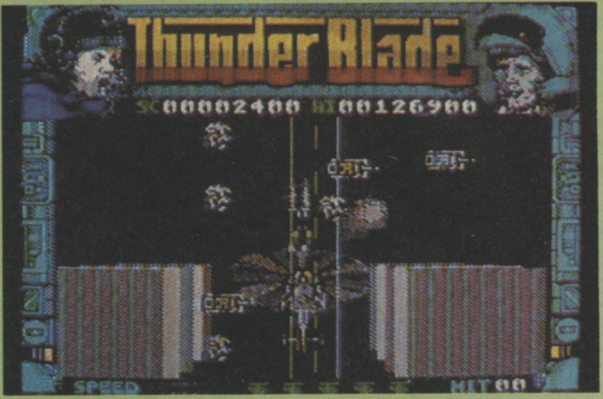
Other versions will be available shortly, but as the gameplay problem lies in the arcade game, we can only hope for improvements in graphics and sound.

● EXPRESS VERDICT

Technically, Mediagenic's conversion is brilliant, the problem lies in the complete lack of gameplay of the original.

This was less noticeable on the arcade version with its state-of-the-art hardware, but you just can't get these effects on the Spectrum – and you're left with little more than a fantastic demo.

✪ ✪



• Give it a whirl!

THUNDERBLADE

US GOLD

Spectrum • £8.99cs, £12.99dk
Out soon on C64, CPC, ST, Amiga, Sega

The other major Sega arcade conversion for this Christmas, via US Gold, is *Thunderblade* – a helicopter simulator in the *Afterburner* mould – but hopefully offering better variety in gameplay.

● GAMEPLAY

It's time to get down to some serious devastation as you glide through cities, canyons and forests in a quest to take out anything that moves. Along the way, a seemingly tranquil trip out to sea is met by a massive, heavily-armed aircraft carrier and its gunships. Survive this and its onto deserts and forests in a bid to take out a flying battleship. The only real worry you have is whether you can keep your finger on the tracer machine gun button for long enough.

Each landscape is viewed in either a direct head-on fashion or from overhead – a diverse system which adds greatly to overall interest and playability.

● GRAPHICS AND SOUND

Visuals are just as impressive as *Afterburner*'s – but with even more variety. The only noticeable flaw is the occasional glitch in speed – which fortunately doesn't happen very often and is made up for by the range of animation at hand.

Audio, comprising copter blade sounds verging on white-noise and spot-effect explosions, ranges from good to bad, although on the whole it's a more than adequate rendition of the arcade version's hi-fi attack.

● OTHER VERSIONS

The other versions also look promising, but they'll have to go a long way to beat the Spectrum version.

● EXPRESS VERDICT

It looks like US Gold have actually done a good job of converting *Thunderblade* – unlike *Out Run*, their chronic effort last Christmas. We'll reserve our final judgment until we've seen all the versions.

Nevertheless, the Spectrum version is superb, with only a lack of long-term interest to worry about, and there is definitely no choice when considering this or *Afterburner* – we'd go for *Thunderblade* every time!

CLASSY CONVERSION!

✪ ✪ ✪ ✪

Rik Haynes

LIVE AND LET DIE

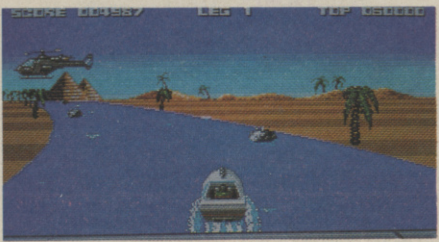
ELITE/DOMARK

ST • £19.95dk
Out soon on CPC, Spec, C64

When Domark bought the rights to the James Bond movie it just so happened Elite had an offshore *Out Run* all ready to go. The two teamed up, buttoned down the lifeboat covers and got down to some serious business.

● GAMEPLAY

In this super-fast fantasy YOU are James Bond. And you're up against San Monique's PM – a certain Dr Kananga who's decided to boost exports by producing the ultimate consumable – the one that recreates its own demand – Heroin.



• Outrun Out Run as you whack up the throttle and mind the mines

From an international itinerary of locations – all involving vast tracts of water – you choose between target practice in the North Pole, exercises on the Nile and South American jungles and finally the New Orleans mission itself. Target practice requires driving your boat at near full throttle as you fire machine guns and missiles at buoys.

Once you've learnt how to handle the boat, using either mouse or joystick, you move onto the exercises to clue up on the offensive defences Kananga will employ. Handy little friends like mines, gun emplacements, dive bombers, choppers, subs, various planes, boats and booby-trapped fuel barrels. In fact, fuel is the key to the game – neither lives nor time are a problem for you – it's simply a question of driving through floating fuel barrels to keep going. Miss one or two and it's curtains. Fuel does run out very quickly.

Ironically, it's best to drive as fast as possible to save fuel – but then normal laws don't apply to James do they? Finally, you must leap off a floating log and fire off a missile to detroy the heroin-processing installation. That's if you make it that far.

● GRAPHICS AND SOUND

Live and Let Die shifts very fast indeed. Far faster than most racing games, in fact. Scrolling is wickedly fluid, with vibrant, colourful sprites completing varied background landscapes. Sound is confined to a catchy intro theme and the usual spot-effects for explosions. Worthy of note, though, is the sound of your jet-drives as you throttle forward to a full-speed cruise.

● OTHER VERSIONS

Also due out on CPC, Spectrum and C64, *Live and Let Die* will no doubt feature the same gameplay with toned-down graphics. Of the 8-bits, the CPC version seems to most faithfully reproduce the great graphics of the ST version.

● EXPRESS VERDICT

If you're after a fast, action-packed game and fancy a change from land-based road wars, *Live and Let Die* is a good choice. Although it's one of those games that require many trips around the same courses to familiarise yourself with the position of various pitfalls, the effort is well worth while. When you have it under control there's only thing further to do. Go around faster. You'll be shaken but not necessarily stirred.

✪ ✪ ✪ ✪

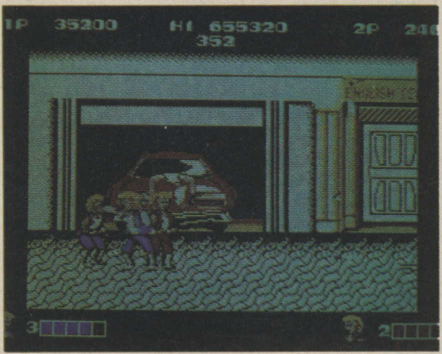
Andy Storer

DOUBLE DRAGON

MELBOURNE HOUSE

PC • £19.99dk
Out soon on CPC, Spec, C64, ST, AMIGA

***Double Dragon* is probably the most famous kick-em-to-death-em-up out of the bunch on Christmas pre-releases. One of the most popular arcade games in '87, Mastertronic has just completed *DD* on the PC, a computer not exactly renowned for its arcade quality audio-visuals.**



• Grappling in garageland

● GAMEPLAY

DD places you in the role of a heroic vigilante given the task of rescuing your luscious girlie from the evil clutches of Big Boss Willy (I kid you not!).

As your work you way through a downtown backdrop you'll encounter all manner of scum ranging from leather-booted S+M 'sters (complete with whips) to mean and massive low-life creeps.

But you're presumably so hard you can not only take out these scumballs, but also use any weapons they leave behind such as knives, baseball bats and even the aforementioned whips.

The final confrontation is with Big Willy himself, who provides a mean challenge, especially as he's got a gun and he's not afraid to use it!

When using the two-player option, the other player will become your partner, who can either help or hinder your mission of no-mercy. If both of you manage to take out Mr Willy, you'll have to fight a duel in order to ascertain the winner of your girlie's affections.

● GRAPHICS AND SOUND

Surprisingly, PC *DD* manages to produce a reasonably accurate display of the action. Sprites and backdrops are well drawn and animated, and their lack of colour is compensated for by clever use of shading.

Less surprising is the sound quality – which is dreadful – but that probably won't come as a shock to PC owners!

● OTHER VERSIONS

All the other versions should be available shortly, with the ST and Amiga versions likely to be the best.

● EXPRESS VERDICT

Taking into consideration the limitations of the PC graphics and sound capabilities, *DD* is quite faithful to it's arcade parent. On the downside, collision detection is a bit dodgy, and gameplay is rather limited.

Overall, *DD* is a credible effort, and makes a welcome change to all those flight-sims available on the PC.

✪ ✪ ✪

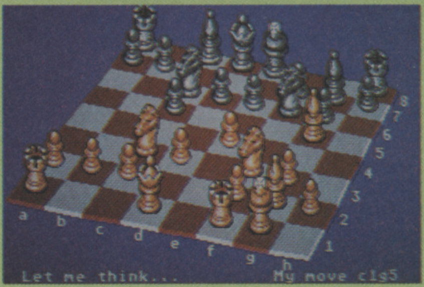
Rik Haynes

COLOSSUS CHESS X

CDS

ST • £24.99dk
Amiga version planned

Martin Bryant's twelve-year history of chess programming has taken him from the early *Colossus* on C64 and Atari, *White Knight* on the Beeb and versions 3, 4 and 10 of this tour de force.



• Colossus X – the games it plays against itself seldom end in a draw

The *X* version's playing algorithm took over a year to develop and concentrated on overall speed and strength in the early stages of a game verified by extensive tests played between two accelerated Apple 2s linked by RS232. The major achievement of this extended research is the arrival of the first chess program which learns from its games!

● GAMEPLAY

Colossus has every feature you're likely to find in any other chess game and more. There are four ways you can make your first move – by using the mouse to drag a piece to its intended square or by clicking on start and end squares, by entering notations at the keyboard or by using cursor keys. The reply can take up to any time you designate and will scan through 11000 records of 2000 lines of play looking ahead anything upto 35 half-moves at a rate of 500 positions a second!

You can also force the program to play for a draw or to lose, but for the most part you'll be playing at the default setting of club-level with *Colossus* out to take you out as quickly as possible. At any point in a game you can also change sides, ask the program to carry on playing itself, interrupt a machine-machine game, take back one or multiple moves, force the program to move or make its next-best move.

You can choose between full tournament play, average move time, equal move time, all moves to be played in a designated time or in infinite time. You can also set up problems to analyse positions and stipulate solutions for normal mates, self-mates and help-mates at any point. You can also load and save games (including 29 games representing the best computer vs human struggles since 1951 and 10 mating problems), replay games and send listings to a printer.

Whilst playing a game, *Colossus* can adjust or update its opening book as required. In this way it can begin to anticipate your own style of play and your strengths and weaknesses and modify its moves accordingly. Thus, quite simply, the program you will have bought today won't be the same one tomorrow! Are we talking about something approaching true AI or what?

● GRAPHICS AND SOUND

Colossus X offers a pliable 3D board-view which can be altered by simply holding the right mouse button down and dragging a wire frame to the required position. In addition there are four types of pieces available – standard, futuristic, oriental and medieval.

When activated, pieces moves smoothly across the board to the required position. You can flip between white's or black's or a sideways view of play. All menu control is mouse-driven and you can flip to a 2D representation of the board too. By hitting space you can access an information screen showing the last seven moves, the state of the clocks, the amount of moves ahead *Colossus* is 'thinking' and it's best line of play. From the sound menu you can select a range of classical tunes to accompany play or get *Colossus* to speak its moves in 5 languages. The speech is okay but suffers from the ST's sound chip's deficiencies.

5 GAME

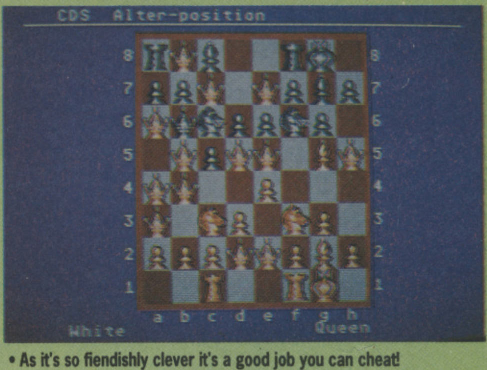
● OTHER VERSIONS

At this stage only an Amiga version is in the pipeline and this should be an improvement over the ST in terms of graphics and sound. No doubt the music and speech will be digitised.

● EXPRESS VERDICT

A formidable opponent which regularly beats the best competitor on the micro-market – *Chessmaster 2000* – can only be described as an essential purchase for any ST-owning chess player. No feature has been overlooked and every one has been designed with great care. Whilst 3D views are more or less standard these days, a program which learns from its mistakes is a first. And what a debut! Brilliant.

✪ ✪ ✪ ✪ ✪



• As it's so fiendishly clever it's a good job you can cheat!

Hostages

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OUT RUN

US GOLD

Amiga • £19.99dk
Already on Spec, C64, CPC, ST, Sega

Nearly a year since the outstanding arcade game was converted to 8-bit format, *Out Run* is now on the Amiga – but has it been worth the wait?

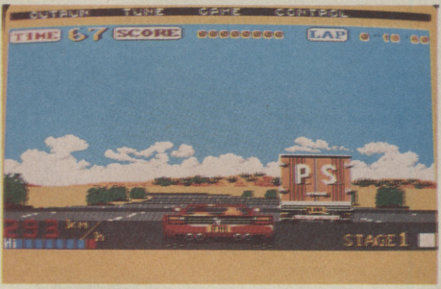
● VERSION UPDATE

Out Run is a driving game, with you placed in control of an open-top Ferrari Testarossa complete with girlie at your side and an open road ahead.

Racing against the clock, you have to navigate some serious roadworks – tunnels, sharp bends and deserts are only the start of your problems as there's the usual selection of Sunday drivers around to give you a hard time.

If you're successful, you'll win the undying love of your girlie – if you're a wimp, you'll be back to driving that Reliant Robin on the M25!

Audio-visuals are just about adequate – they're better than the 8-bit versions – but the Amiga is capable of much more.



• Without the hype, what are we left with?

When 8-bit *Out Run* came out last year, everyone was swept up by US Gold's hype, taken for a ride, and left with a really atrocious farce of a conversion. If you're still interested in 8-bit versions they will soon be available on a compilation package called *Giants* – which also includes *720*, *California Games*, *Gauntlet II* and *Rolling Thunder* – all for about £15.

Whatever US Gold have been driving at since the 8-bit *Out Run*'s arrived last Christmas, they certainly haven't been refining *Out Run* on the Amiga. Somebody should have put their foot down!

In a word it's pathetic. The audio-visual quality is apalling when compared to other Amiga titles, and the limited gameplay rears its ugly head after only a few games.

Out Run on the Sega console is still the only half-decent home conversion, which is a shame because the arcade game is simply brilliant – not just because of its high audio-visual quality and hydro-cabinet, but also for its mega gameplay.

There may not be many Amiga driving games available, but that's no reason to buy an inferior product. Stay clear.

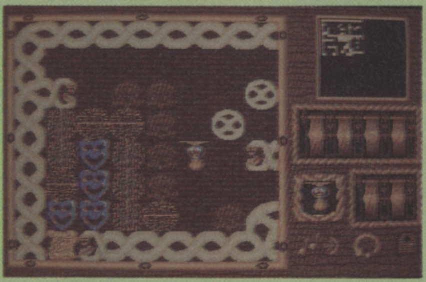
✪✪

Rik Haynes

PROSPECTOR IN THE MAZES OF XOR

LOGOTRON

Amiga • £19.95dk
Already on ST, BBC, CPC, Spec, C64



• Screen 2: Rocks & Zeppelins. How do you get at those masks past those force fields and boulders?

***Xor* has been out for some time on the other major formats, but the Amiga version has certainly been worth waiting for, with twice the number of levels, a built-in maze construction kit – and multi-tasking.**

This last feature is a breakthrough in itself – it means *Xor* can now be played as a 'pop-up' game, whenever you need five minutes' break from your spreadsheet or word-processor.

● GAMEPLAY

There are plenty of puzzle/maze games about, but none that have managed to match the inventiveness, variety and sheer wackiness of *Xor*. *Prospector* features such novelties as sticks of dynamite for blowing your way through walls, zeppelins which shoot off to the left as soon as they're released and boulders which adopt a comical expression of surprise when you give them a shove.

You control two heros who must find their way about the maze collecting (in the final version) blue hot-air balloons. Once they've all been picked up you can then exit that level and move onto the next. But finding your way about the maze at all is difficult until you have a map – put together by assembling four scrolls found in the maze, and shown at the top right of the screen.

There are thirty levels in all, and while the mazes (each roughly sixteen full screens in size) start off comparatively easy, they soon get harder, and need both heroes to co-operate if they're to be solved. There are no time limits, which is just as well considering the variety and difficulty of the puzzles.

● GRAPHICS AND SOUND

The graphics with this type of game are hardly going to stretch the Amiga's capabilities, but the characters are humorous, colourful and well-animated. Sound is good, with both soundtrack and effects optional.

● OTHER VERSIONS

The Amiga version is the best-looking to date, and packs a whole new host of features. Most disappointing, graphically, must be the ST version.

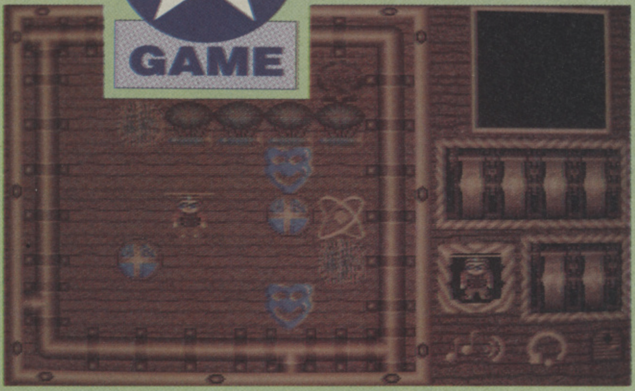
● EXPRESS VERDICT

One of those timeless classics, *Xor*, and now *Prospector*, will last you a long, long time with its progressively harder – and more exasperating – puzzles.

✪✪✪✪✪

Rod Lawton

5
GAME



• Screen 11: Razor Edge. You're blocked in — unless you can work out some way to detonate that bomb (top centre)

EXPLODING FIST +

FIREBIRD

C64 • £9.99cs
Also on Spec

***Exploding Fist +* is another kick-em-up game – in fact it's not a million miles from System Three's golden-oldie beat-em-up – *International Karate +*.**

● GAMEPLAY

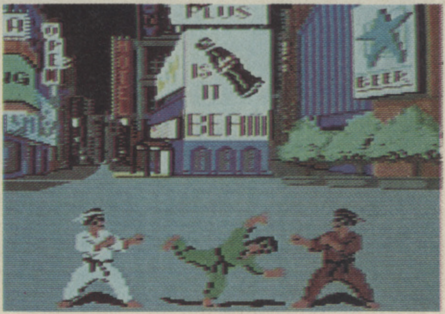
EF+ is a one or two-player fighting game with either one or two computer-controlled opponents, depending on the number of human players.

Using different joystick combinations you can produce 17 different manoeuvres such as punching, kicking, blocking, jumping and move left or right. In combat you have to knock out your opponents by whatever means possible, thus adding to your score and combat points (the reward depending on the type of knock-out achieved).

The bonus round appears after a few combat rounds, with you having to stop an onslaught of nimble ninja's. Then it's on to the next combat round, which is basically the same as before only more frantic, ferocious and tiring.

● GRAPHICS AND SOUND

As with *IK+*, the game is played against a single backdrop – a downtown scene complete with neon advertising signs.



• Greenie indulges in a spot of militant break-dancing.

The sprites, soundtracks and sound effects perform their assigned tasks well, but there is nothing outstanding about them – apart from the cute 'girlie' sprite announcing the start of each round.

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INCENTIVE

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Due out soon on Spec, C64
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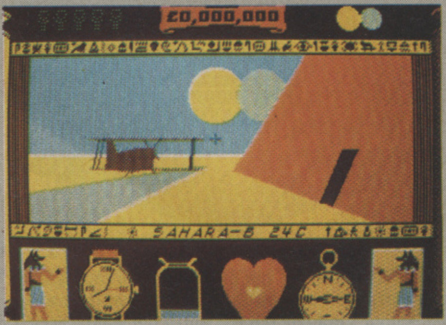
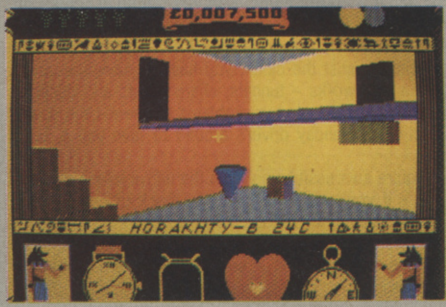


• That's the entrance, by your F-15



• But have you entered a pyramid or a labyrinth?

After the success of *Driller* and *Dark Side* on the 8-bits and their recent conversion to the 16s, here comes Incentive's latest game featuring the unique Freescape system developed on the CPC.

For a machine that looks like being the first to suffer from lack of software support in the year ahead that's a great testament. Could this be the final game to push 8-bit power to its limits.

● GAMEPLAY

Your mission is to locate and destroy the shrine of the Sun God Ra, which is located at the apex of an ancient Egyptian pyramid. The shrine is beset by a curse – if anything should ever prevent the sun from shining on the shrine during daylight hours it will be destroyed. Unfortunately it's now 26th October 1930 and in just 2 hours ...yes you guessed it... there's going to be an eclipse by the moon. When this happens...well let's just say the tides will turn forever. And that's before the meteorites stop raining down.

You start off outside the pyramid beside your biplane – it's then a simple manoeuvre into a nearby entrance and you're away. So, it's your job to make your way to the top with the revolver, wrist watch, water bottle and compass you've arrived with and save the world – again. This time though there's treasure to be had on the way so you might end up rich in the process. Indeed, the only way is up – the scoring system is based on the amount of treasure you touch to collect.

Along the upwardly mobile route you encounter mazes and mysteries, undiscovered chambers and locked chamber barriers. Besides needing to regularly top up on the water supplies you find in troughs, you'll also need to keep an eye out for Ankhs – those cross-like symbols of life the Egyptians were so fond of. Find these and you gain access to barred areas and progress can be maintained.

From time to time you'll need to rest and give your poor old heart a rest. And watch your feet – some of those chamber floors are decidedly unsteady. A map will be handy too, as you'll have to explore everything and everywhere. And of course, there are the fiendish traps left by generations past to deter would-be treasure-trovers. Get hit by a poisoned dart and it's the after-life for you.

● GRAPHICS AND SOUND

The sense of other-worldliness presented by Freescape is certainly very convincing. You get the impression you could be wandering around for miles in its solid constructions. The main screen is almost entirely devoted to a viewing window surrounded by various indicators of your current state of health, progress and orientation.

Movement is truly three dimensional – at any point you can move up, down, forward, back, left, and right so it's no wonder you can lose all sense of direction. However, you can just press F to return you to a Face forward position. It's also very useful to be able to change your height now and again to gain a better view of your environs.

There are some fifty locations requiring thorough exploration – that's twenty or so more than *Driller* and *Dark Side* – and there's the usual skillful use of shading to convince you there's a lot more than just four colours up and running. Sound is about as good as you're going to get on the CPC though – being confined to beeps and spot-effects that nevertheless manage to maintain the sense of atmosphere and involvement this tour de force of 8-bit programming evokes.

● OTHER VERSIONS

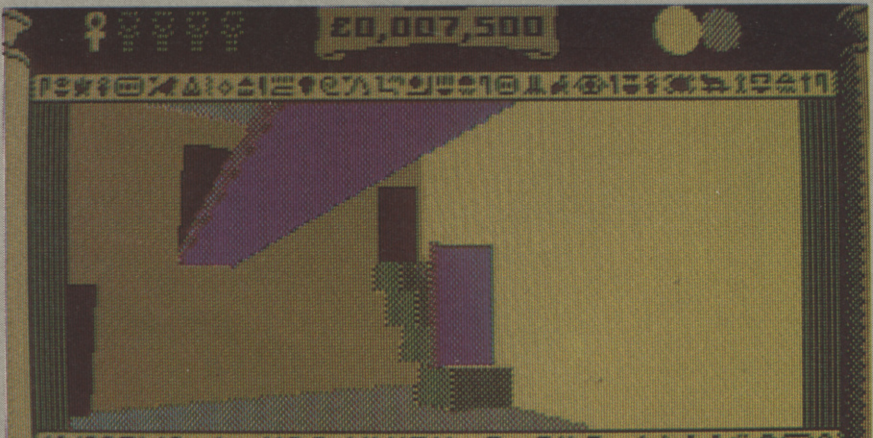
Total Eclipse will soon be out on the Spectrum and C64 any day now with 16-bit versions due in March.

● EXPRESS VERDICT

For its convincing atmosphere, technical accomplishment and graphic excellence, *Total Eclipse* is a winner on all counts. Incentive deserve great sales if only because they've managed yet again to prove that as far as solid fills are concerned the 16-bit machines have a long way to go given their memory capacities and processor speeds. Although there's no way Freescape is fast enough to support frame animation, its screen updates are quick enough to deliver the essential ingredient in any game – sheer involvement.

✪✪✪✪✪

Andy Storer



• Incentive's ingenious Freescape – it's like *being there*...

● OTHER VERSIONS

Spectrum *EF+* more than holds it own against the C64 version.

● EXPRESS VERDICT

EF+ is very much a case of 'seen-it, bought-it, played-it – all before', especially if you've previously purchased *IK+*. While on the subject of *IK+*, that currently represents far better value for money – it's on the *We Are The Champions* compilation package from Ocean, along with four other major titles.

Still, if none of that bothers you, *EF+* can provide an enjoyable bout or two.

✪✪

Rik Haynes

CORRUPTION

RAINBIRD

PCW • £24.95dk
Already out on ST, Amiga, PC, Spec
Due out on CPC, Apple II, Mac

Amazing! An adventure where you don't have to trot around picking up treasure, battling goblins and exploring damp, dank and cliche-infested dungeons.

Already out on other major formats for some time, *Corruption* now makes it onto the PCW. It's a game set in the big city, where all is not as it seems, where insider-dealing is the norm, and where only the quick-witted survive...

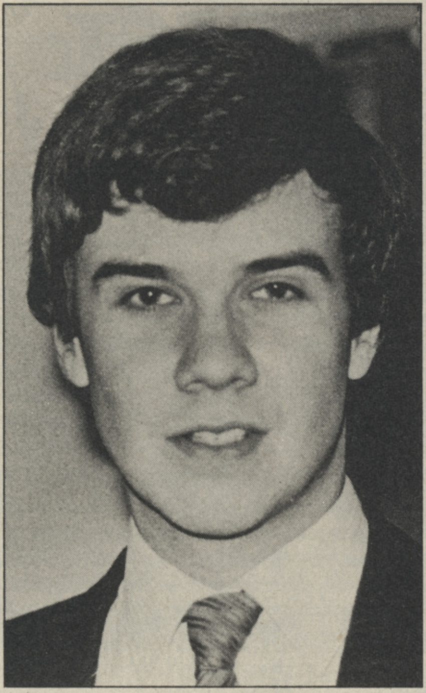
● VERSION UPDATE

The future looks rosy when you first start. You've just been made a business partner in the stockbroking firm of Rogers & Rogers, after all.

However, things are not quite what they seem, and if you don't rumble the plot pretty sharpish you'll find your-

Incentive to succeed

Incentive is one of the games software industry's great survivors, having been around for, oh, at least five years. The seven-person team from Tadley is fronted by 29-year-old Ian Andrew who talked to us about the company's remarkable achievement with Freescape.



• Ian Andrew

Total Eclipse is your third release based around the Freescape system. That's been a big project for a long time now, hasn't it?
We've been working on Freescape for over two years.

How did the original idea come about?
When we looked at what we wanted to do next, we decided to do something different, something that no-one else could do. We looked around and the only thing that no-one had done was solid 3-D on 8-bit computers. We knew it was going to take a lot of time because of all the research – in fact we completed it about 15 months later.

What's interesting about Freescape is that it started off as a technical challenge but the end result has been to create a feeling of entering a new world because you can go under things, around and over them – was that the intention?
That was the exact intention; to create a feeling of being there for the user. In fact he code name for it before it was called *Freescape* was *Being There* – you saw the screen image as though you were in the place you were supposed to be and that degree of realism was what we aimed for.

Now, tell me this, you had the first Freescape game *Driller* which got rave reviews last Autumn and many people felt that technically, and from a gameplayers point of view, it was the best thing around. But inevitably it got beaten on the Christmas charts by games like *Out Run.* How do you feel about the way that the industry is at the moment? Do you resent the marketing clout of your competitors?
I don't resent it but they will always have the number one game if they've already got a licence which is extremely successful in arcades. What we've found is a niche which no-one else can do so we're quite happy to go along those lines. The opportunities in the future include on the business side doing interactive training which is a slight diversification and on the games side an actual arcade machine which is dedicated to Freescape – hardware as well as software. We believe that could be an incredible experience.

When might the world see one of those?
At least 2 years.

You're already talking to manufacturers about it?
Yes, we are but we haven't negotiated anything yet. We want to get Christmas over with because we're very busy at the moment.

You don't think that the pace of Freescape games is more suited to home computers?
On the 8-bit versions, yes, the speed it goes is more suited to home computers. But the speed which is possible through dedicated hardware would be 100 times faster. So you can put in much more detail...

Who's the technical genius behind this? Is it one person's brainchild or a whole team of people?
It's basically me and my brother. I had the idea and then he joined the company. He was previously working for business software and doing things on radar. He joined the company specifically to tackle the problem of doing 3-D.

He's a programmer?
Yes, he programs four computers: Spectrum, Commodore, IBM, Amstrad.

Do you program yourself?
No, I do the design, advertising, marketing and running the Company and production which is a pain in the ass.

Incentive are now one of a select band of small surviving independent software houses. Are you proud to be one of these?
Yes, absolutely.

Do you think there will always be a place for the smaller independent company?
I think to survive and be independent you've got to have a speciality which you are very good at and ours is solid 3-D which a lot of the bigger companies can't do – so we're quite proud of that.

Tell me about the interactive training. Are you saying you can use Freescape for business use?
It's still at the experimental stage. We're talking about interactive training for larger companies whereby they've got say a new installation or base and they want a computer generated image so that would be able to move around the base in three dimensions and respond to certain situations. That's all I can say about it at present.

I see, so it's using Freescape to give a company a computer model?
Yeah, of whatever they want it for. A lot of the business 3-D packages don't allow you to walk around in real time or they cost thousands of pounds.

---

self framed for insider dealing (dealing in the shares of a company about which you have inside information).

To get yourself out of this mess you'll have to find and examine various objects as well as interrogate other characters. Further clues are provided in the packaging, which includes an important audio cassette...

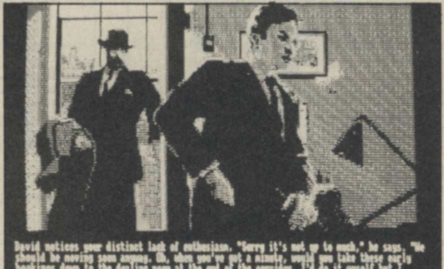
Given the PCW's limitations, the graphics are really quite good, and the game's parser is powerful enough for some quite complex commands, such as PUT THE CONTENTS OF THE ENVELOPE IN THE DESK'S TOP DRAWER. Long commands like this make sense, because the clock advances one minute every time you hit RETURN – and time is not on your side.

The Amiga and the ST versions naturally boast the best graphics, with the Spectrum next in the pile and the PCW last. However, the plot is the main thing, and in that respect the versions are identical. PCW9512 owners *can* run *Corruption*, but they'll need to copy all the files from side 1 of the program disk onto one 9512-formatted disk, and all the files from side 2 of the program disk onto a *second* disk (so as not to confuse the operating system when you're asked to do disk-swaps).

As a change from the usual sword-and-sorcery slant of traditional adventures, *Corruption* is like a breath of fresh air. Add an enjoyable plot which will take you a while to solve, and you've a winner on your hands.

✪✪✪✪

Rod Lawton



David notices your distinct lack of enthusiasm. "Sorry it's not up to much," he says. "We should be moving soon anyway. Oh, when you've got a minute, would you take these early bookings down to the dealing room at the end of the corridor. I'd do it myself but I really must rush off to a meeting." He hands you the list. "If there's anything you want to ask about, fire away."

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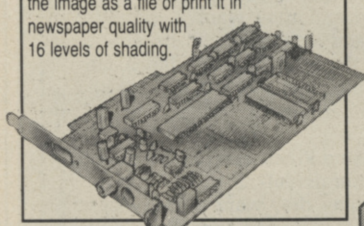

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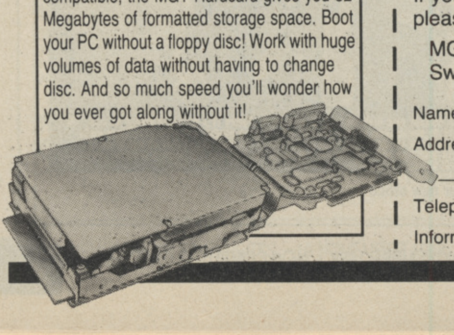

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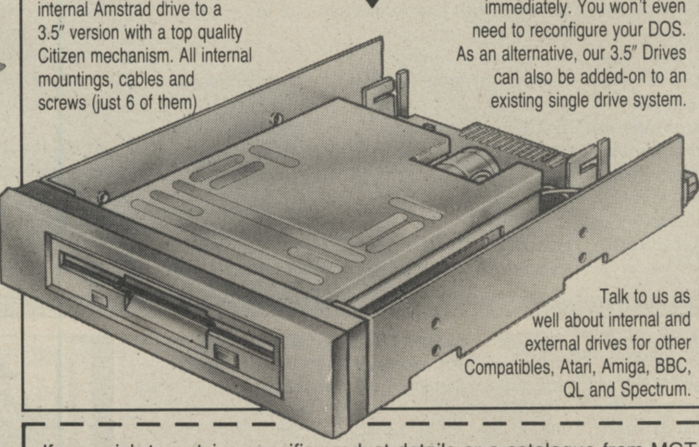

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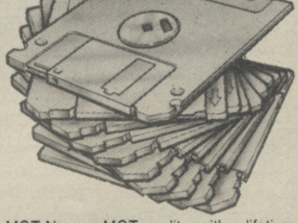

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Demystifying disks

How to store information – and find it again afterwards...

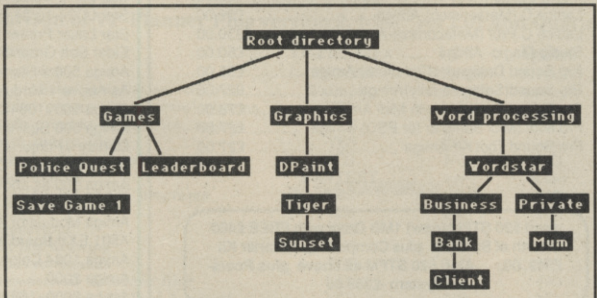
Computers are the very epitome of absent-mindedness. Once you turn the power off, everything goes.

It can be somewhat irritating if you've just spent several hours typing in another chapter of your best-seller and your local electricity board has a bout of hiccups. Blam! – total memory wipe.

You wouldn't want to leave your computer permanently switched on even if you could, and since you can rarely complete a task at one sitting, it's obviously useful to have some way of storing information to retrieve at a later date.

Back in the days of monolithic mainframes, magnetic tape was the most common storage medium. You know the kind of thing we're talking about – enormous metal cabinets with big tape reels on the front which spin backwards and forwards in seemingly random fashion.

When the microcomputer became popular it was obviously impractical to have one of those giant tape players next to your desk, so the ordinary audio cassette player/recorder was pressed into service.



• A well-organised disk has a tree-like structure of directories, sub-directories, and files...

Magnetic tape has a number of advantages for computer storage. It's cheap – you can use any ordinary cassette costing only a few pence; it's mechanically simple – you can get the human user to operate all the switches; and it offers high capacity – you can cram a lot of data on a tape.

But there are disadvantages too. Tapes are slow, and you can't easily find a particular piece of information if it's not right at the beginning or end. Neither is it very convenient to constantly have to operate fast-forward and rewind switches on the tape player as you work.

Disk magic

Disk drives overcome all of these problems. Once you've inserted a disk you don't have to worry about the technicalities of how it's used. The computer, or the software you're using, takes care of all that for you. Moreover, disk drives are fast: a disk can be spun much faster than a tape can be pulled through a cassette mechanism.

(The basics of a floppy disk are not that dissimilar to those of tape. Both use a thin plastic material which is treated with a metal coating that can be magnetically altered. But whereas the tape is pulled past a magnetic read/write head, in the disk drive the head is moved over the disk as the disk spins beneath it.)

Information is faster and easier to find with disks. Consider an audio tape, where you have to search through every bit of the tape to find any given musical track – whereas with a record you can position the needle directly.

However, disks were slow to be taken up for use with personal computers because of expense. A disk drive requires some precision engineering and that never comes cheap, but as the market for drives grew, mass-manufacturing brought prices down a little and increased competition brought prices down a lot.

Falling prices

The price/performance of disk drives has improved nearly as dramatically as that of the computers themselves. A few years ago £500 would have bought you a 200K disk drive; today ST and Amiga owners can buy 800K drives for around £90, while £500 will now get you a hard disk offering as much as 30,000K of storage.

Disk drives, therefore, are now fast, flexible, and relatively cheap. For those reasons, the floppy disk has become the standard medium for computer storage.

There are three kinds of disk commonly available: the older 5.25" disks used by many computers from PC-compatibles, to Commodore 64s, to BBC Micros; the new standard of 3.5" used by the latest PC-compatibles, Apple Macintosh, Atari ST and Commodore Amiga; and the definitely non-standard 3" used almost exclusively by the lower-end Amstrad machines.

But while different computers may use the same kinds of disks, once a disk has been prepared for use with, say, an Atari ST, a Commodore Amiga won't be able to read information from it, or write data to it.

The preparation of a disk is called 'formatting', and different computer manufacturers use different formats.

The disk format specifies a number of things about the disk: whether it uses both sides of the disk or only one; how many tracks (concentric magnetic bands) each side will hold; and how many sectors, or chunks, each track will hold. This format is imposed on the disk magnetically by a special program supplied with your machine.

When you buy a software package, the disks will already be formatted – if you format them again you will destroy the software you've just paid for. But new, blank disks have to be formatted before you can use them.

Your filing system

Once a floppy disk has been prepared you can forget about the format because it's there purely for the benefit of the computer. What *you* have to know is how the computer expects you to deal with your disks and the information you store on them – which means files and directories.

Think of a disk as an electronic filing cabinet containing a series of files. Some computer operating systems, like those on the Macintosh, the Atari ST, and GEM on the PC, carry this metaphor further with pictorial representations of your information as folders and files.

Files generally come in two types: program files – software that does something – and data files, information that programs can operate on.

Under older operating systems, these were differentiated by extensions to the file name. On a Commodore 64, for example, programs usually have the .PRG extension, while on PC-compatibles it is either .COM or .EXE. Data files generally have a variety of extensions depending on the program that created them.

Under the newer WIMP (Windows Icons Menus Pointers) operating systems, the pictorial icons usually show you the difference between program and data files.

Unless you're planning to do any programming yourself, the only kinds of files you'll create are data files. Whatever application you use, you'll create relevant data files that will be saved on disk: letters in word processing, for example, or pictures in a graphics package.

Directories

If you only planned to have one disk and a few files, your information could be stored willy-nilly and it wouldn't really matter. But as the number of files, and disks, grows, it becomes more important to organise them logically. This is done by means of directories.

For the computer the directory is very like a postal directory, allowing the computer to track down your files – by track and sector numbers rather than street numbers and names.

From your point of view, the directory lets you group your files into logical collections so that, for example, you can keep your business letters separate from your private correspondence. This is done by means of sub-directories, which act like folders. A well-organised disk has a tree-like structure of directories, sub-directories, and files, and for that reason the structure is often referred to as a directory tree.

Learning how to deal properly with disks will take you a long way toward mastering the gentle art of computing. ●

Need to know?

Any particular concepts or bits of jargon you don't understand? Anything you always wanted to know but were too embarrassed to ask? Why not write to: First Timers, New Computer Express, 4 Queen Street, Bath, BA1 1EJ. No question too dumb, no subject too simple, and no condescending replies. Guaranteed!

Technobabble

A weekly assault on computer jargon

LOAD • SAVE

The jargon relating to handling files can be very confusing, since it's used in a quite different way to common English usage.

For example, 'loading' software is used in the sense of loading a program into the computer. In real English, it is the computer that is loaded, not the program. But everyone talks about 'loading *Wordstar*' or 'loading *Gauntlet*', rather than the pedantically correct 'load the computer with *Wordstar*'. Similarly, 'save' means putting something away rather than rescuing it.

With the introduction of WIMP operating systems, load has been replaced by 'open', which makes some sense when you're dealing with a folder, but how do you 'open' a document? Again, the jargon makes some sense but only in the appropriate context.

WIMP systems use screens, or partial screens, as windows on the document to be worked on. So you don't open a document, you open a window on that document. To put the document away, you simply close the window.

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There were and still are a couple of pools programs for the Atari ST that guarantee to you performance better than chance (?) or promise to you power? to forecast the pools the way you want. Others are asking you for disk for free demos while weeks are going by and you are missing your chance for a dividend. Nevertheless **pools-system** still remains the only one in the market that delivers the goods. Lets have a look at some facts. **Fact** user friendly and still the only one that does not require you to be some kind of a football expert or hot shot system analyser. **Fact** pools systems is the only one that performed even slightly during the difficult & unpredictable Australian season. **Fact 13/8/88**. 4 aways out of the recommended first 6. 10 homes out of the recommended first 15. **20/8/88** Start of the English season, the system trapped 9 out of the 14 score draws & all 4 no score draws. **27/8/88** 9 out of the 12 score draws & 3 out of 6 no score draws. 4 homes out of the recommended first 6. **3/9/88,** 6 homes out of the recommended first 7, 4 aways out of the recommended 6. 5 out of the 7 score draws & 2 out of the 3 no score draws. 40 correct results out of the 58 possible. **Fact**, all forecasted printouts available at any time for any checks. So do not waste your time with any other programs or systems. They are not going to entertain your hopes or wishes. And to top all the facts, we guarantee the **Pools-System** performs better than any other pools program in the market on any computer, because we **guarantee** to you that using the **Poolsbuster in cooperation with Poolsplanner you are going to win the pools more than once a year.**

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Features	**VP-Planner +**	**1-2-3**	**Quattro**
Worksheet size	9999x256	8192x256	8192x256
Number of disks/ installation required	2/simple	4/complex	4/simple
2 line and/or pop-up menu control systems	YES	NO	NO
Undo/Rédo commands, Entries, macros	YES	NO	NO
Transcript macro files	YES	NO	limited
Background priority recalculation	YES	NO	NO
Fast recalculation	FASTEST	see	below
Add-in toolkit for add-in programs	YES	NO	NO
Text editor	YES	NO	NO
Report generator	YES	NO	NO
Line and box drawing	YES	NO	NO
Data input commands	YES	NO	NO
Multidimensional database files	YES	NO	NO
dBASE file retrieval by field & record	YES	NO	NO
Sideways print	YES	NO	NO
Background print	YES	NO	NO
Autosave	YES	NO	YES
Range-column-width commands	YES	NO	NO
0 width command (hide)	YES	NO	NO
Up to 6 windows on a worksheet	YES	NO	NO
Print graphs from worksheet	YES	NO	limited
Number of user directly executable macros	any	27	any
Macro learn mode	YES	(add-in)	YES
Edit recorded macros	YES	add-in	YES
Macro de-bug (step) mode	YES	YES	YES
Maths/trig functions	23	18	19
Logical functions	9	7	8
Financial functions	11	11	11
Statistical functions	18	14	14
Date/time functions	15	11	12
String functions	17	17	21
Other functions	14	11	15
Total functions	107	89	100
EGA, CGA, Hercules supported	YES	YES	YES
VGA, ATI video support	YES	NO	vga only
Speed trials			
Addition large	0.82	4.00	*
Addition small	0.39	1.00	2.20
Division large	0.82	8.00	*
Division small	0.39	3.00	2.42
Expon large	0.82	58.00	*
Expon small	0.39	19.00	8.68
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All times in hundredths of a second. Large and small versions of four macro driven worksheets were used: large models contain more than 75 rows and 75 columns; small models contain 75 rows and 25 columns. Tests were conducted on an AT clone at 10MHz and no co-processor. *Quattro could not load large models with 588k free after DOS. Lotus 1-2-3 returns the values accurate to the nearest second only. *VP Planner Plus* runs on IBM PCs and compatibles with 384k or more RAM

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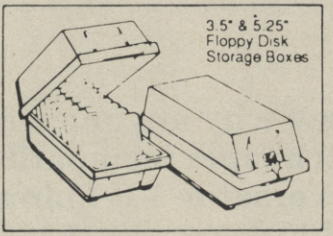

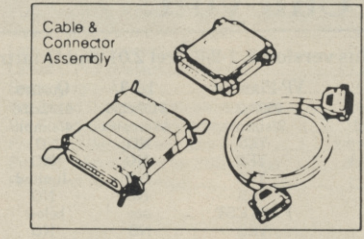

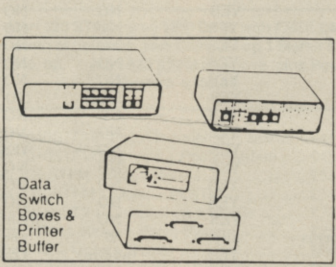
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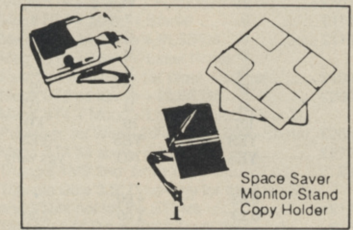
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EDUCATION AND GOVERNMENT ORDERS WELCOME

WANTED: a Word Processor that's got the lot...

Steve Cooke, the columnist who types more words in an hour than you'll read in a week, puts together his dream feature list for the perfect word-processor

Software houses are currently pouring millions into developing Desktop Publishing packages aimed at improving our presentation. What everyone seems to have forgotten, however, is this: there is still no such thing as a decent word processor, let alone a state-of-the-art one. *Word - star, Word, Wordperfect*...you may THINK these products are hot stuff – but in my opinion they are, except for simple letter writing, useless.

The fact is that most word processors are grandchildren of the original text editors, conceived at a time when computers rattled teletypes and the only thing you really wanted to write was some obscure line of system commands. For the most part, all that got printed out were numbers and program listings. Since then we've had a whole host of bolt-on improvements added to the original limited concept, ranging from comprehensive printer control to spelling checkers – but all this means is that we now have more powerful text editors.

The need

The problem becomes clearer if you ask yourself what you actually want to use a word processor for. Creating documents involves far more than simply manipulating text. You want to polish your linguistic style; import and export passages, files, and data instantly and at will; not to mention all the usual tasks such as search and replace, paragraph delete and so forth.

Unfortunately, word processors seem to make heavy weather of these obvious tasks, let alone anything to do with enhancing writing creativity. Writers don't need text editors – they need tools for linguistic creativity. Bearing that in mind, here's the recipe for a REAL word-processor.

The answers

Our ideal word-processor toggles between three main operating modes: outline, process, and file management. You can access any of these modes at any time during writing, so toggling between outline and process, for example, switches data display from that of an outline to that of a document (see screenshot).

Having an outliner means that you can first arrange your thoughts logically under different categories. If you're not satisfied with them, you can reorder them or edit them – and all with far greater ease than you can in a conventional word processor (this article, by the way, was written on an outline processor – *PC Outline*).

Once you switch from outline mode to processor mode, the item numbering system of the outliner would disappear, leaving you with a document for editing and expansion. You should be able to toggle back to outline mode if necessary, in which case each tab indentation denotes a successive hierarchy of text. This would be useful for certain editing tasks such as moving paragraphs or printing out brief structure resumes.

Proper file management is essential within a word processor – but hardly any give you full control over your files and disk contents. You should be able to flick to a properly structured view of your disk, copy, delete, view, print, rename, sort, and move your files without the slightest difficulty – and certainly without quitting your text. *Locoscript* on the PCW goes some way to providing a proper file management environment – a pity that it falls down in other departments (mainly speed).

You need to do more than just store files, however. You also need to be able to locate instantly

DOTTING THE I'S

Subject to the general principles described elsewhere, what else does our word processor offer?

1) SEARCH AND REPLACE

Instead of the usual absurd options of searching for words, words, and nothing but words, you should also be able to search and replace print codes, carriage returns, paragraphs beginning with the word 'Noggin...', and all combinations of these features. How else can you do things like automatically swap all instances of underlined words to *italics*. No-one can claim that the word-processors we are currently offered give us adequate s & r...

2) STYLE SHEETS

a) Style sheets should be style sheets, not (as in most WP packages) rulers. In our program they would enable you, at the stab of a key, to customise EVERY aspect of the text that follows, from case through to print style, as well as the usual margins and tabs. Style sheets should also include OUTPUT controls, so that you could, for example, define NOT TO BE PRINTED or PRINT TO FILENAME 'X' as a style attribute within your text, enabling you to have conditional printing control within your document.

Finally, and very importantly, style sheets enable you to specify how many columns there are across the page. This means that at any point you can switch to two, three, or more columns of justified or unjustified text – and then revert to one column whenever you wish.

3) CURSOR MOVEMENTS

a) Cursor movement should be by key or by letter. The latter means that, supposing you want to jump to where it says 'James' in the middle of the page, you hit CURSOR DOWN once, then type J...whereupon the cursor jumps down to the first word beginning with J...then A...the cursor jumps to the first word beginning with JA...and so on until you reach James.

4) SCREEN AND DOCUMENT LAYOUT

a) The screen is either blank, with a status line, or with complete menus. *Wordstar* is quite good in this department – other programs often aren't. You spend a lot of time staring at the screen and should be able to configure it as you like.

5) MULTIPLE DOCUMENTS

There is currently more support for this at the upper end of the market, but most word processors still only let you edit one file at a time. This is ridiculous. Being able to open more than one at once means you can copy text from one to another with the greatest of ease or work on two related documents simultaneously. Even *P C Outline* allows you to open multiple documents. Enough said.

6) FRILLS

Naturally you can index any word by hitting a control key with the cursor placed on it. You can similarly generate tables of contents and footnotes. Printing is buffered and can be carried out while working on your document. You can also create print queues of more than one document. Oh yes, and one last thing – there's an instant conversion key for turning upper case text into lower case and vice versa.

which files contain references to Horace, and which to Humphrey. Supposing you're a poet writing an ode to Jessica, in which you compare her to a summer's night. You're on your 89th version, and seem to remember that an earlier version said something about a summer's day. Stab at a key and there it is in a little window, ready for pasting in if you want. This 'locate passage' facility is even more useful for journalists and technical authors who often cover related subjects in detail.

Files are also stored with a brief 100-character note which, if entered, will display on demand alongside the file directory entry, reminding you what it's all about.

Entering text

Text is input to the document at all times in one of two ways, which you can toggle between at will. The first is simple entry from the keyboard, the second is by **file transfer**. Selecting file transfer takes you to the file management screen, but with the added option of receiving the file into the document via modem. Yes, our word processor has **integrated comms facilities**.

Text is output from the program via a menu to any device, including a remote comms link or – this is a real fantasy – an **industry** standard document format. But wait, you cry, there isn't such a thing. Exactly – and why not? It seems absolutely absurd that when database and spreadsheet packages have defined ways of swapping structured information, word processors are still stuck with the ubiquitous ASCII file, which carefully strips out all the WP features – type style, tab positions etc – you've just spent ages putting in!

Customisation

Our word processor can be **customised** via easy-to-access menus and has easy to use **macro** facilities. This means having a simple 'learn' facility invoked by a single chord-key press (e.g. Ctl-L) after which every key stroke made is stored in a buffer. Hitting Ctl-L again exits the mode and prompts you to assign the command structure, phrase, or even entire document to one of the number keys in conjunction with CTL. Invaluable when you need to make a long series of similar changes to a document.

When it comes to **printer controls**, many word-processors are simply appalling. The modest *Tasword* could teach more expensive packages quite a bit on this topic. Again, hitting a chord-key sequence should immediately reveal an editable screen with at least twenty user-definable printer code sequences. These are all labelled by the user and appear when invoked on a drop-down menu for selection (they may also be inserted using CTL sequences if you have a good memory). How else can you properly exploit the powers of your super-spec printer? (condensed, extended, double-height, NLQ, etc.)

Most WP packages are a nightmare to set up for convenient use, though there are some exceptions – *PC Outline* has easy-to-use macro facilities, for example, and *Sprint* is supposed to give you everything – if you're a programmer. But most word processors only give you the cream after pouring away the milk.

Getting help

While you're writing, you often need to insert information that you can't immediately calculate or locate. We therefore need three desktop accessories that will pop up over our text whenever required. The first is obviously a **calculator** – but it should be linked to your current cursor position so that hitting a key will swap the sum straight from the calculator into your text.

The second is a **calendar,** though our word processor takes a leaf out of Lotus' *Agenda* package and (if asked to do so) can 'interpret' date references according to your system clock (if you have one). Thus entering 'next Thursday' in your file will result in Thursday, 12th December (or whatever) being stored in the text. This should be a live or static option (*PC Outline* has this) which means that a different date could be printed if the document was edited and used again subsequently.

The third accessory is simply a **scratch-pad** or notebook. It automatically saves to disk and enables you to take immediate note of something that occurs to you while you're working on another subject.

Searching for style

Finally, our word processor contains three stylistic aids: a **thesaurus**, a **spelling checker**, and a **style checker**.

Thesauri and spelling checkers are widely implemented these days. The former tend to be reasonably competent (though often very short on suggestions) but the latter are frequently diabolical. How often have you been told that there are 49 mis-spelt words in your document, only to discover that 48 of them are proper names. Simple, tell the checker to ignore capitalised words that do not follow a full stop and a space(s).

Furthermore, some spelling checkers can't even cope with inverted commas, initials (capitals again), and numbers. Our (non-existent one) can.

Although often derided, style checkers CAN help a prolific writer – everyone makes frequent use of certain word phrases that a style checker can pick up on and prompt you to change. They also make short work of that simple editing task – checking for repetitions of words in close proximity.

All these features can be instantly called up, and the style checker has an additional feature – it not only recognises your word structures but can, if asked, generate a little 'beep' every time you say 'rather good' (for example) and suggest an alternative ('absolutely spiffing').

What you end up with is a word processing system that presents a complete integrated environment for creating documents – not just for getting them into print. The first software house that fills this gap is going to sell more product in a week than IBM sells in a month. I'll be first in the queue... ●

Eight that almost make the grade

The perfect word-processor may not yet exist, but some come fairly close without breaking the bank. Here's our pick of the bunch.

● KIND WORDS

The Disc Company • £49.00
Amiga

HIGHLIGHTS
- best printed output of Amiga wordprocessors
- good mail merge and spell checking
- graphics import

DRAWBACKS
- slow at printing

● LOCOSCRIPT 2

Locomotive Software • bundled with Amstrad PCW 9512

HIGHLIGHTS
- excellent printer control
- 24-pin drivers available
- copes with foreign languages & mathematical symbols
- good value
- comprehensive manual
- 2 fonts as standard, extra available

DRAWBACKS
- slow – especially at block handling
- no word counter

● MULTWRITER 2

£100 • Paperback Software
PC compatibles

HIGHLIGHTS
- twin file editing
- easy access to DOS
- multiple formatting rulers.
- good on-line help.
- numerous other features including spell checker, macros, word counter, calculator, file encryption, etc.

DRAWBACKS
- early versions were bugged.

● PC OUTLINE

Brown Bag Software • £59.00
PC compatibles

HIGHLIGHTS
- pop-up wordprocessor/ideas organiser
- accessible from other programs
- many powerful features
- available as shareware to try out.

DRAWBACKS
- not intended as a fully-fledged word-processor

● PROTEXT

Arnor • Prices £30-60
Amstrad CPC, PCW, Atari ST, PCs

HIGHLIGHTS
- powerful and very fast
- works with two documents at once
- good spell-checker and mail-merge
- file processing from within program.
- flexible 'Execute' language for macros
- word counter and many other features

DRAWBACKS
- printer control slightly awkward on some versions
- confusing for first-time users.

● SCRIBBLE

HB Marketing • £40.95
Amiga

HIGHLIGHTS
- fast auto-reformatting
- simple and fast screen font/layout
- mail merger and spell checker

DRAWBACKS
- can't incorporate graphics
- can't handle extra Amiga fonts

● TASWORD

Tasman Software • £14-£30
Spectrum, Amstrad CPC, PCs.

HIGHLIGHTS
- good value
- very easy to customise especially on print controls.

DRAWBACKS
- some versions have a strange approach to reformatting of text
- slow spell checker (bought separately)

● WORD WRITER

Electric Distribution • £79.95
Atari ST

HIGHLIGHTS
- integrated mail-merger and spell checker.
- good thesaurus online.
- includes 'outliner' for planning.
- powerful, fast and well thought out.

DRAWBACKS
- can't incorporate graphics
- only one ruler per document

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Saving on disks

I'm just about to upgrade from a Commodore 64 to an Amiga and have a question about floppy disks. On my 64 I could save money by buying single-sided disks and using them as double-sided by cutting a notch in the left-hand side and then simply flipping them over to use the 'back' side. (This worked perfectly and I never had any trouble.)

What I'd like to know is, can I do the same with the 3.5" disks that the Amiga uses?

• The short answer is: No, not in the way you describe. Here's the long answer ...

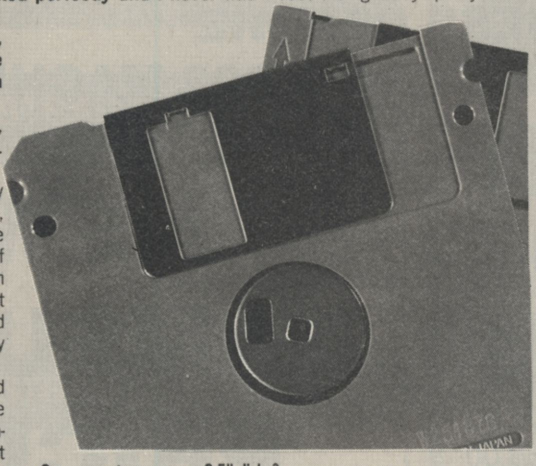
Disk manufacturers only make double-sided disks, batches of which are checked as they come off the production line. If both sides check out OK, they get put into sleeves marked 'double-sided' and away they go.

However, if the tested disks fail on one side, the entire batch is marked 'single-sided'. Now obviously not every disk in the batch will be faulty, but at least some will have problems reading and writing to the dodgy side.

Just because the disk formats without problems doesn't mean it's going to work properly, and just because you've written your precious data to it doesn't mean you're going to be able to read it back again. The only way to find out is to wait for the disk to fail, and then it may be too late.

So by using single-sided disks in the way you describe you're taking a gamble. Chances are you'll be all right, but don't use those disks for anything you can't afford to lose.

As to the 3.5" disks used by the Amiga, these can only be used the right way up. If you look at the physical construction, you'll see that the disk itself is protected by a sliding metal cover and that only slides one way. If you turn the disk upside down the cover can't move.


• Can you cut corners on 3.5" disks?

However, the Amiga uses a double-sided drive – it can read and write both sides of the disk without needing the disk to be flipped over.

You can usually use single-sided disks in your Amiga but the same considerations apply as with the 64. The disks are only certified for use with one side and you run the risk of losing data if you use both.

However, there's a further point: if you buy a box of single-sided disks for your 64 and the reverse side doesn't work, you've still got usable single-sided disks. If you get a box of single-sided 3.5" disks home and they won't format, the disks are completely unusable.

You pays your money and takes the risk.

Data power

We're a small company using an Opus PC-compatible machine almost exclusively to maintain a database of clients. The computer has served us well for the last year but now the database has grown to such an extent that things are slowing down.

For various reasons we'd prefer not to buy a completely new computer system at the moment. Is there anything we can do to get things moving again, at least temporarily.

• Ultimately you'll have to upgrade to a more powerful machine – there's nothing like a big database to show up the shortcomings in personal computers and it's why most banks and large corporations resolutely stick to mainframes for handling their data.

However, in the short term there are several things you could try – but don't expect miracles.

First is a general upgrade of your existing hardware. Depending on the software you're using, more memory might speed things up, first by reducing the need to go to the disk as often for information, and second by allowing you to use a large RAM cache which can also speed up disk access.

Also, consider a new, faster hard disk. Most PC-compatibles use slow hard drives – with around 65 millisecond access times – to keep the overall price down. You could install a 30Mb drive with 28ms access for under £300 and you may be able to carry on using your existing drive as well.

A more radical solution but still short of a new computer is to replace your existing processor with an AT-standard 80286 chip. This could make your existing machine as much as five or six times faster for between £250 and £400. There are a number of such accelerator boards available but the *Orchid Turbo* and *Everex Excellerator* are two of the better known.

Total comm-fusion

I'd like to buy a modem but on looking at a lot of advertising I'm more confused than ever. Some makes seem to be classified by baud rates and others by a system of numbers like V21 and AD.

What does it all mean?

• The V-numbers are the computer industry's latest way of describing baud rates. All you have to know is what V-number describes what baud rate. Here they are:

V21	**300 baud**
V22	**1200 baud**
V23	**1200/75 baud**

Most modems actually support multiple rates, and the most common combinations are V21/V23 and V21/V22. V23 is the standard used by Prestel/Micronet, while most other databases and bulletin boards use V21 or V22.

Naturally, there has to be a joker in the pack and that is the one which works at 2400 baud. Calling this V24 would be far too obvious, so it's known as V22bis (I don't make this stuff up ... I'm just telling you).

The AD designation stands for 'auto dial' and its counterpart is AA, or 'auto answer'. Unless you're planning to run your own bulletin board, auto answer is highly dispensable, but auto dial is well worth having.

Naturally, you pay for what you get: single-speed modems are quite cheap; dual-speed models a bit more expensive – between £120 and £150; triple-speed comes in at anything up to £500; and 2400 baud can cost more than your computer.

CP/M info

I am an Amstrad PCW8512 owner and I'd like to learn more about CP/M but information seems to be hard to come by these days. Is there a user group that could help?

• Try the CPM Users Group at 72 Mill Road, Dartford, Kent DA2 7RZ.

Grammar checkers

I seem to recall reading somewhere recently about a program that checked the grammar, writing style etc of word processed documents.

This sounds like just the thing I'm looking for but I've lost the reference to the program. Any ideas?

• There are now a number of such programs on the market (all for the PC) but the latest and perhaps the best is *Readability* from Scandinavian PC Systems.

It computes a readability index for documents, shows you when your writing has become too wordy or over-complicated, and even compares your writing style to that of other authors, so if you want to write like Charles Dickens you can.

Readability costs £56.80 from: Scandinavian PC Systems, PO Box 215, Uxbridge, UB10 8TG.

Wait-watching

In adverts for PCs I keep seeing claims that certain machines have 'zero wait-states' while other computers have one or more wait-states.

What does this mean, and how important is it when deciding which machine to buy?

• The wait-states issue is one of the great red herrings for the potential PC buyer. It has to do with the relationship between the computer's central processor and its complement of RAM.

The Intel series of processors used in PCs – the 8088, 8086, 80286 and 80386 – are 32-bit processors. In other words, they can manipulate data four bytes at a time. But it's expensive to provide a 32-bit data bus – the route by which data is moved from the memory to the processor and vice versa – because, crudely, you need a lot more wires to carry the data, and a lot more electronics to handle the process.

The early machines – the 8088 and 8086 – used an 8-bit (one byte) data bus, while 80286 machines use a 16-bit data bus. That's one bottleneck.

While the evolution of the data bus continued, designers also exploited another way of boosting the PC: increasing the clock speed of the processor. This means that the processor can execute instructions more quickly. But while processors got faster and faster, memory chips lagged behind. That brings a second bottleneck – because fast processors handling 32 bits of data have to sit idle while the data is fetched from slow memory along an 8 or 16-bit wide bus. Those are the wait-states: the periods during which the processor does nothing waiting for the data.

A PC with zero wait-states has an optimised design so that the processor doesn't have to suffer these idle periods.

Of course, this is technically important if you have to have maximum performance from your PC. But for most users it's an academic question – memory size, disk capacity, graphics, expandability and price are much more important. ●

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ST CLUB

Game creators a con?

There's only one use for so-called game creators, and that's personal enjoyment. Have you ever tried making a game and then comparing it to a commercial product? It's a joke.

The whole point of game creators is to make you do as little programming as possible, preferably none, and give you numerous options for manipulating sprite and background data. Current game creators, *STA C* and *STOS* (sounds like a kiddies' cartoon), fail miserably. While they are fun packages and great value, you'd only be fooling yourself if you thought you could recoup your money by producing a sizzler.

STAC (*ST Adventure Creator*) lets you mix *Neochrome* screens with text Unfortunately there's no disguising a *STAC* game. *STOS* is more flexible, but that's because it's a glorified version of Basic (non-compiled, at that). Unless you're a programmer,l forget it.

Two more game creators are on the way: *Talespin* and *SEUCK* (*shoot-em-up construction kit*). Why do they al have such gross names? *Talespin* wil be available shortly from Microdea and promises to let you include compressed pictures and digitised sounds with text. Apparently Microdeal are using the system to create severa adventures which they hope to market Of course they're creating games with the system, just like Palace used *SEUCK* to create *Barbarian II*. There is some truth to Palace's story, but very little. Programmer Jo Walker used a much-modified *SEUCK* to produce the game's background scenery. And that's all!

SEUCK, incidentally, will be available from Palace around March. I've seen the Amiga version (Palace reckon the ST product will be very similar) and was impressed. The creation phase is in true WIMP style; you simply point and click at the options you want. *SEUCK* is very limited in what it can do (it can only produce *Xenon* clones) but what it does, it does extremely well. Non-programmers watch out for this one.

Unlikely software

Forthcoming software that won't be top of your 'must have' list:

Z80 X 68000 Source Code Translator • CP Software (099382 3463) • £99.95.

The package takes Z80 source code – either stuff ported across from a lesser micro or something written in an ST editor – and converts it to 68000 source. From there you may use *Devpac* or the equivalent to produce executable object code. I've seen it in action. It's unbelievable (if you're into that sort of thing).

King James Bible n South West Software Library (0703 229041) • £12

A set of six 3.5" disks housing a compressed version of the Bible. The material is no longer copyright, which explains the meagre price. As there's no copyright you can extract sections without fearing the hand of God.

HDX Hard Disk Drives • SM Distribution (01 883 1335) • £1449.95 to £6499.95

High capacity drives (77 to 760 Mbytes unformatted) at high prices. Up to eight drives can be chained to give 5.3 Gbytes maximum. Comes with Hybrid Arts' proprietary controller and software which boasts fast access times.

Elite cheat

This hack gives you Military weapons on all sides; large cargo bay, ECM system, fuel scoop, escape pod, energy bomb, docking computer, galactic hyperspace, retro rockets, ECM jammer and cloaking device; clean and harmless status; 200,000,000 credits. If you can't achieve the ELITE rank with that lot then something is definitely wrong!

Type the listing into *ST Basic*. There are two versions of Basic: one written in 1985 and the other in 1987. You can check which you have with 'About ST BASIC' in the Desk menu – the copyright message will display the date. The later version doesn't support the DEF SEG command in line 10, so make sure you remove the offending line.

> ## Flair story
>
> ***For months I've been promised a review copy of AMS's Flair Paint, first previewed at the May Atari show (when it was nearly ready). So where is it? Here are some of AMS's excuses: "We've amalgamated with Logitech", "It's not coming out", "£$%!*", "Name change...", "We're waiting for the manuals", "Bugs...", "It's in the post". Arrghhh!***
>
> ***The latest chapter in this ludicrous saga is programmer Jeff Lawson's failure to arrive at Future's offices to demonstrate the program. Poor Jeff drove round the back streets of Bath for over an hour trying to locate us. Eventually he gave up. But did he bother to get out of his car and phone us so that someone could find him? Did he, hell!***
>
> ***What makes it even more annoying is that Jeff has the only copy of the program. And it is protected in such a way that a manual is need to start the package. Naturally the manuals aren't ready so even if AMS send us a copy of Flair we can't review it.***

With a blank disk in the drive type RUN. A file called CHEAT.CDR will save to disk. By loading CHEAT.CDR into *Elite* you can have all the goodies mentioned earlier. Go for it!

```
10 DEF SEG=0 'REMOVE THIS LINE IF
20 ' YOU ARE USING THE NEW BASIC
25 dim a(256):b=varptr(a(0))
30 FOR T=b TO b+255 STEP 2
35 READ A$:POKE T,VAL("&H"+A$):NEXT
40 BSAVE "CHEAT.CDR",b,256
50 DATA FFFE,A7B6,F9B2,4EAB,F7F1,D2F4
60 DATA 84C7,65F0,EFEE,EDAA,EBE9,E9E9
70 DATA E7E7,65E4,63E2,E1E1,DFDF,DDDD
80 DATA DBDB,D9D9,D7D7,55D4,53DD,D1D1
90 DATA CFCF,CDCD,CBCA,C9C8,C7C6,C5C4
100 DATA C3C2,C1C0,BFBE,BDBC,BBBA,B9B8
110 DATA B7B6,B5B4,B3B2,B1B0,AFAE,ADAC
120 DATA ABAA,A9A8,A7A6,A5A4,A3A2,A1A0
130 DATA 9F9E,9D9C,9B9A,9998,9796,9594
140 DATA 9392,9190,8F8E,8D8C,8B8A,8988
150 DATA 8786,8584,8382,8180,7F7E,7D7C
160 DATA 7B7A,7978,7776,7574,7372,7170
170 DATA 6F6F,6D6C,6B6A,6928,6754,6564
180 DATA 6362,6160,133F,2B39,5B5A,5958
190 DATA 5756,5554,5350,5150,4F4E,4D4C
200 DATA 4B4A,4948,4746,4544,4342,4140
210 DATA 3F3E,3D3C,3B3A,3938,3736,3534
220 DATA 3332,3130,2F2E,2D2C,2B2A,2928
230 DATA 2726,2524,2322,2120,1F1E,1D1C
240 DATA 1B1A,1918,1716,1514,1312,1110
250 DATA 0F0E,0D0C,0B0A,0908,0706,0504
260 DATA 0302,0100
```

Richard Monteiro

PC UPDATE

File a fax

These days, half our ad sales department hovers round the FAX machine while the other processes orders wrenched from its bowels. Sad that only companies with a Grand to spend can hope to add a FAX number to their letterhead.

Well, not quite. A new spate of releases is trumpeting FAX cards for PCs. The idea is that your PC can spend its idle moments sending or receiving facsimiles. Files can be prepared with a word processor or DTP package and pumped onto the FAX network for other, less techie machines to dump out at the other end. Similarly, FAXes from elsewhere can be sucked in and held on disk until you want to print them out, on your very own dot matrix or laser printer.

GETTING TOUCHY

Now that we're all getting used to mice as the obvious way of getting about PC software, it worth the occasional reminder that there are other ways of interacting with a computer. One of these is the touch screen.

A touch screen is an extension to the front of a monitor either as a touch sensitive glass sheet or a frame producing a crosshatch of infra-red beams. When contact is made with the sheet or a pair of beams are broken, the touch screen controller can interpret the position of the finger or stylus on the screen.

The obvious problem with this is that fingers are not high-res pointing devices. One way round the problem is the technique adopted by Cameron Communications (0734 664611), which automatically averages the area of finger contact to one point on its 1024 x 1024 high resolution screen.

Sounds good – the only disadvantages are the need to keep your PC switched on to take the calls and the need for an extra telephone line, though this is true for any FAX installation. The second drawback may be quickly removed, anyway, as there are already modems which monitor a phone line and pass speech calls on to a 'regular' handset – a very sensible idea.

If you're interested in a FAX card, try Program Shop (01-316 7777), who are asking ú230 for theirs, though without BT approval as yet, or Interquadram (0753 36464) who would like ú345 for their approved JT FAX.

Down the DOS path

If you have a hard disk on your PC (a growing trend) you will probably find it gets cluttered very quickly. With a little thought and reorganisation, you can improve things out by using sub-directories and the MS-DOS PATH command. Start by considering the files you have to keep in the root directory. There are only two.

When you start your PC, you will probably want to run device drivers and set up the numbers of files and buffers DOS allocates. Most drivers have a .SYS filetype and all have to be called from within the CONFIG.SYS file by using a DEVICE command. Typical examples are DEVICE=ANSI.SYS and DEVICE=VDISK.SYS. The CONFIG.SYS file has to be in the root directory of your hard disk, assuming you boot from the hard disk.

The other essential file is AUTOEXEC.BAT. This is where you run background utilities, such as the PD utility DOSEDIT which should be an essential part of any PC user's toolkit. AUTOEXEC is also where you can specify the directories into which DOS looks for files. Unless you tell it otherwise, DOS will only look in the current directory when it needs a file. You can, however, stipulate any sequence of directories across any of the drives installed on your PC. You do this with the PATH command. Here's one I prepared earlier:

```
PATH C:\MSDOS;C:\UTILS;C:\BATCHES;C:\;D:\;
```

Once this command is issued, either from the command line or from within an AUTOEXEC.BAT file, each directory in the list will be searched in turn for any file.

The names of the directories in the example are not haphazard. The MSDOS directory should contain all DOS utilities, UTILS could take all non-Microsoft utilities and BATCHES could be filled with batch files for running applications. You don't need to have the D:\ path unless you have two partitions on your hard disk.

Using a path structure like this means you can keep your root directory clear of all files except CONFIG.SYS and AUTOEXEC.BAT. Everything else can be kept out of the way in its own sub-directory.

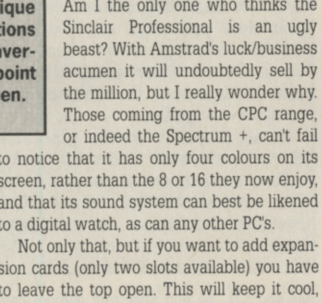
Schneider remarks

Am I the only one who thinks the Sinclair Professional is an ugly beast? With Amstrad's luck/business acumen it will undoubtedly sell by the million, but I really wonder why. Those coming from the CPC range, or indeed the Spectrum +, can't fail to notice that it has only four colours on its screen, rather than the 8 or 16 they now enjoy, and that its sound system can best be likened to a digital watch, as can any other PC's.

Not only that, but if you want to add expansion cards (only two slots available) you have to leave the top open. This will keep it cool, perhaps rather too cool when you spill your lager into it on a late night programming binge.

No, if I was in the market for a low cost PC I'd go for something rather more substantial, like an entry level Opus PC or the new Schneider Euro PC. There's a certain irony that Amstrad's erstwhile German partner has taken the design of the CPC, a keyboard with a small diameter drive on the end (3.5" rather than 3", this time), and turned it into a 'leisure' PC. Although it suffers from the same graphics and sound restrictions as the Professional, and can only take one half-length expansion card, I know which I would rather have gracing my desk.

Simon Williams



• The design of Schneider's Euro PC is strongly reminiscent of Amstrad's own CPC6128.

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AMIGA BLIT

Computer Discrimination

Why is it that the price of Amiga games software is predominately an extra five pounds or even more when compared to the Atari versions of the same software? This is a question that has been raised time and time again by frustrated Amiga owners.

The problem has not restricted itself to Amigas and STs; 64 and Spectrum owners have been at odds for a number of years because of the price differences in their games software. So why is it that a software house feels that it must discriminate between machines?

A Shower of information

Amiga programmers looking for a good source of information on their machines will be pleased to hear about Abacus's latest additions to their growing library of technical books for the Amiga.

The three books are Amiga System Programmer's Guide, AmigaDOS Inside and Out and Amiga Disk Drives Inside and Out. After looking through the books over the past couple of days, first impressions are very good indeed. All three are completely up to date and include sections on the new KickStart/Workbench release, 1.3 (useful if we ever see 1.3!).

Some may find the two programming manuals too much to take, as they are fairly heavy information-wise. If you're not interested in setting up GIMMEZEROZERO windows and AbsExecBase does nothing for you then you may want to wait a while before handing over your hard-earned cash. On the other hand, AmigaDOS Inside and Out is a book that should be of interest to every Amiga user.

In all, if you're in the market for some decent reference material but just can't afford to take out a second mortgage for the official Addison Wesley/Commodore manuals then these are certainly worth a look.

Richard Tidsall of US Gold sees the problem as one that is controlled completely by market forces. According to Tidsall, US Gold's pricing policy is viewed from a worldwide basis and, as a whole, sales of ST games are still higher than those of the Amiga therefore they can afford to keep the their prices down. Tidsall continued, "...A similar situation existed with the ST. Originally our ST games were sold at £24.95 but once sales had reached a certain level, we were able to drop prices...

Amiga sales have now reached a level where a similar price cut can eventually occur starting with the Amiga version of LED Storm which will retail at £19.99..."

Back to BASICs

Amiga owners have for a long time been crying out for an alternative to the Basic bundled with their machines. While *AmigaBasic* may be fine for most applications, it does not offer the kind of speed that a compiled Basic can achieve. Until now the alternatives have been rather expensive but all that could change with the recent announcement to two new Basics for the Amiga.

Anyone who has been exposed (!) to an Atari ST will instantly recognise both *GFA* and *HiSoft Basic*. These two Basics have been doing the rounds on that machine for over a year now and have managed built up considerable reputations during that time.

HiSoft Basic will eventually appear as it did on the Atari as two separate versions. The up-market version will retail at around £100 but the budget version, *Power Basic*, will most likely cost half that figure.

The list of features offered by *HiSoft Basic* looks impressive: Complete compatibility with *AmigaBasic* and *HiSoft Basic* on the ST, strings upto 16 MegaBytes in length (sounds useful!) and interactive error correction during compilation to name but a few.

Fans of Glentop's *GFA Basic* are best advised not to hold their breaths for the arrival of the Amiga version. Rumour has it that the conversion is not going too well. Two programmers were working on the conversion for a number of months but when asked to produce something (anything!) it turned out that the main programmer had not even started. He was then quite rightly given the boot. Upon hearing the news, the second programmer (a friend of the first), walked out in protest. Oh well, life's a funny old game!

Cheats Galore!

Are you pinned down with the enemy closing in all around you in ActionSoft's *Operation Wolf* clone *P.O.W.*? Here's a tip which should help you bring the word of justice, peace and the American way to all those Communists.

Some screens involve destroying helicopters and tanks, which is all very nice until your missile supply dries up. You're then faced with the task of destroying the enemy's hardware with a mere peashooter of a machine gun. This can have its advantage though! Once a helicopter or tank finally explodes, keep on firing into the explosion and your score will shoot up.

The award for most obscure tip must surely go to following cheat for Psygnosis' super shoot-em-up *Menace*. At any point in the game, type in "XR3ITURBONUTTERBASTARD" and you will be rewarded with a full array of alien-wasting equipment.

MENACE
PSYGNOSIS

• Frantic action in Menace

The fun doesn't stop there, however! By pressing various keys on the numeric keypad while in the cheat mode, you can journey between levels unhindered. Pressing any number between one and six will take you to any of the six screens while pressing ENTER will get you through to the end-of-level guardian.

Not a lot of people know that!

Jason Holborn

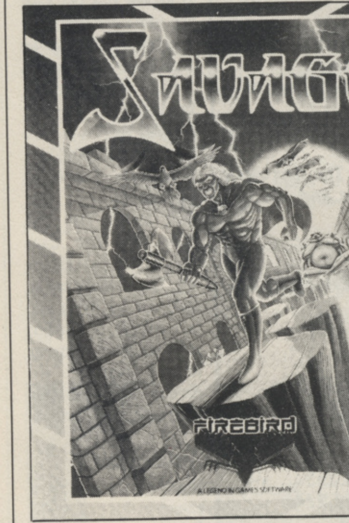
SPEX

16-bit spin-off

One thing which is really encouraging about the recent 16-bit revolution is the way ST and Amiga mega-games, given extensive coverage in the computer press, seem to be inspiring Speccy coders to even greater feats of programming. There's no doubt about it, the standard of Spectrum software is higher than it's ever been.

True, there are still some dodos luring menacingly on the shop shelves, but they usually fail because of weak gameplay or just a bad idea rather than for any technical reasons.

A good example of this filtering down of programming talent is Firebird's *Savage*. It's a game you wouldn't have thought possible all those years ago when you were sure *Horace Goes Skiing* was absolutely the furthest the Spectrum could be pushed.



Concept-wise, it's no more than a three-load horizontally-scrolling slice-em-up with a curious 3D *Deathchase* clone sandwiched in the middle.

Graphically, however, it's stunning. The muscular hero and various mutant-type chappies he has to fight are huge, colourful and smoothly-animated.

As you run, jump and decapitate nasties, all in front of a multicoloured background, it's amazing to see the speed of movement and very little of that old Spectrum enemy: colour clash.

Savage has had me hooked from the start, although I'm still not sure whether my addiction is due to the gameplay or those glorious graphics. Here are some tips to help you along.

- Remember your energy decreases all the time, so speed is vital.
- Getting across the fire pits is easy when you know how – simply jump on the thoughtfully-provided stepping stones, keep running and just before they disintegrate jump again.
- Generally, it's worth killing the end-of-level guardians, as they leave green energy bottles and weapons, or give you a temporary shield.
- Your firepower can be improved by picking up the lightning symbol.
- If all else fails, you could always take the easy option and simply use the level two password – SABATTA.

Budget gem

Something else which has had me chained to my ageing Spectrum is *Draconus*, a budget release from newcomers Zeppelin. It looks similar to *Savage*, with large graphics and detailed scenery, though this time it falls into the arcade adventure category and isn't quite as colourful as the more violent Firebird program.

To begin with, I was dying much too regularly to think it was any good, but after a while the mix of monster-bashing and object-collecting had grabbed me.

Perfect for a budget game, and worth getting hold of if only to see the delightfully-animated death sequence.

Sanxion remix

Ever tried speaking to a Commodore 64 owner? Communication with lower life forms can be difficult, but if you do manage to get any sense out of them it could well concern *Sanxion*, a shoot-em-up which has become a classic on the aforementioned machine.

The great news is that Thalamus have wised up and plan to release *Sanxion '88 – The Spectrum Remix* in early December. I'm not sure how you remix computer games, but the fire button finger blistering action and split side and overhead-views sound appetising.

Football inflated

If you bought *Football Manager II* and have been boasting to friends of your team's glorious cup and league-winning exploits, whilst in reality you're currently lying 92nd or thereabouts, it may well be worth getting hold of the *FM II Expansion Kit*.

With this add-on you can alter division, amount of cash, points awarded for a win or draw, as well as team names, colours, player names and the name of the cup.

At £6.99 for the tape version and £9.99 disk, the *FM II Expansion Kit* seems a little overprices for options which could have been incorporated into the original. No doubt fanatics will want it, though.

Robin Allway

Freebie mania

It seems that Infocom and Rainbird aren't the only companies who put interesting items in with their software. Trivia experts will remember the blood capsules included in Domark's Friday the 13th, the numerous freebies which catapulted US Gold's awful World Cup Carnival to the top of the charts and recently the paraphernalia bundled with the Codemaster Plus range. System 3 have topped the lot with their limited edition Last Ninja II package. Included in the box is a deadly plastic throwing star and ninja-style hood.

In the interests of journalism I've tested both. The throwing star is particularly effective for persuading colleagues to modify or change opinions and as for the hood, I can't think of a better way to hide a bad case of acne. Who says us computer games players are childish?

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Coming up from under the Big Apple is the *Bobby Yazz Show*, the first of Destiney's releases. It should be reaching you as you read this, so keep your eyes peeled.

LISTINGS

This week's listing is a program that could improve the presentation of your Basic programs.

This program is a machine code listing which is typed in a Basic loader form.

Once the data has been read into memory a simple "SYS49152" will run the program.

Line 170 is the data for the colours. The first eight numbers are the colours for the bars and the last number is the border colour.

• colour bars • machine code

```
0   FORL=0TO134:READA:POKE49152+L,A:NEXTL:
    SYS49152
10  DATA 120,169,192,141,21,3,169,13
20  DATA 141,20,3,88,96,169,0,173
30  DATA 14,192,201,0,240,27,201,1
40  DATA 240,58,169,27,141,17,208,169
50  DATA 1,141,25,208,169,127,141,13
60  DATA 220,169,129,141,26,208,76,49
70  DATA 234,169,40,141,18,208,234,234
80  DATA 162,0,188,117,192,136,208,253
90  DATA 189,126,192,141,32,208,232,224
100 DATA 9,208,239,169,1,141,14,192
110 DATA 76,26,192,234,169,255,141,18
120 DATA 208,234,162,0,188,117,192,136
130 DATA 208,253,189,126,192,141,32,208
140 DATA 232,224,9,208,239,169,0,141
150 DATA 14,192,76,26,192,10,10,8
160 DATA 9,12,8,10,8,7
170 DATA 09,08,07,01,01,07,08,09,00
180 REM ^^^^^^^ COLOR DATA ^^^^^^^
```

Online fun

Compunet's *Federation* is doing well, and is a MUST for any wacky 64 owner interested in fighting and space fantasy. Also revolving around the net are some useful technical problem solving spots. These can be found at "ICCAIDE". There are lots of programs worth the effort of downloading from that technical genius and agony aunt EDDY CAROL. Eddy's domain can be found at "EDDY".

Moving away to Ireland, there is a very active user group there called C.U.G.I. (Commodore User Group of Ireland), who are Dublin-based and doing rather well on Compunet – there is now a Dublin node. In the near future, it will be possible to access Compunet from TTY, so even the serious or wacky PC owner can log on.

There have been quite a few rumours that Compunet may be going European. This would mean that you could talk to a Dutch friend on "partyline" for local call rates. So for all those Europeans who want to be CNetters, it could just be your lucky day. Compunet has access to over 1000 programs on the 64 alone, which include pd games, demos and utilities.

Overseas

It is believed that there is a new disk drive for the Commodore 64 already on sale in the U.S., ranging from $100. The drive is called the "1581". In common with the ST and Amiga, it uses 3.5" disks – which means we could be seeing games using up to 800K per disk. But is it faster? More news when we have it.

I & M theory

Did you know that in common with the Amiga the C64 can also have 320 x 400 Interlace? This column will give the theory from month to month for those interesting routines.

The interlace on the C64 is very similar to that on the Amiga, except that the Amiga does interlace using its copper list. On the C64 you would have to:

1) Take your hi-res or multi colour bitmap and take the data from each row of every other line and then place the data in rows onto another bitmap in memory not leaving out every other line.

2) Repeat this but start one line down and store it onto another bitmap (e.g. the original picture could be at $2000 (8192). You then place one part at $4000 (16384) and the other at $a000 (40960)).

3) Once you've done this flip from one to the other each frame. This will make your eyes think that the two pictures are one. The interlace can be improved by using certain colours or shading methods when drawing. In later issues we will include the machine code listing for all to use.

Artura poke

Here's a poke for infinite energy in this game:
Reset machine
Type POKE 53074,169
SYS 32768

Sell out

I.C.C., well-known to all CNetters, will be at the 12th official Commodore Computer Show at Novotel in London selling disks of public domain software for the 64 and Amiga, including work from ASH + DAVE, BOGG and use (IAN + MIC).

After all these years of 64 demonstrations, the 64 is still going strong with demos proving it better than many 16-bit computers today. Demos to remember remain *Border Zone* by MAT + PSY with music from DEMON, and *Pure Genius* from the exploding BOB + DOUG who brought you *IO* from Firebird.

We'll keep you posted each week about new demos. This week's favourite was *Logo Show* from ASH + DAVE. It features many different logos from top software houses fading in and out, with the title music being a funky version of the *Airwolf* tune by the well-known MANIACS OF NOISE. The demo breaks no barriers on the C64, but does show nice presentation.

That's all for this week gamesters, but we will have more chat on demos next week, with tips on how to get them.

Ian & Mic

CPC centre

Red hot tip (ouch)

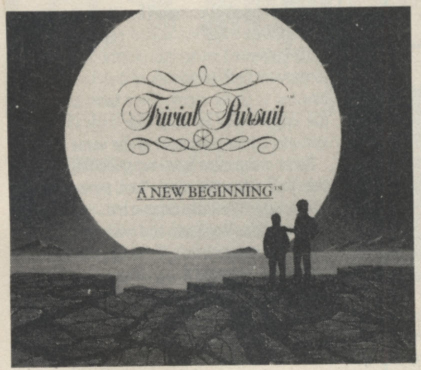
A hardware tip I – hang on, don't go all catatonic on me! There'll be no diagrams, parts lists, photographs or pathetic don't-burn-yourself-to-death-with-a-red-hot-soldering-iron type messages round here. A friend of mine (OK, my only friend) came around to complain that his new printer keeps producing double line feeds. And this is what I told him, peeps: take your shiny new printer lead and cut the wire going from pin 14 of one end to pin 14 of the other. Don't fancy taking a blade to your lead? You could just insulate pin 14 with a piece of sellotape (pretty dull method, if you ask me). The point is, that's the signal causing the extra line feed. Problem solved.

Next week I'll tell you how to make playing *Outrun* a pleasurable experience. Funnily enough, that too involves a red-hot soldering iron...

Bored game of the year

What happens on Christmas Day when the Queen's speech comes on? Well, the TV goes off and you have to find something even Great Aunty Mary (aged 97) can take part in. Hide and seek is out of the question, you'll probably lose her and only find her again when the Christmas tree gets packed away for another twelve months.

Eyes turn reluctantly towards nice Johnny and his SeepySea,6812,66464 (whatever that is) and all he can suggest is *Rambo LXXXVIII*, which is a little, er, sophisticated for everyone else – viz. he gets a score of twenty billion and ten and the others are dead before they pick up the joystick. (Only in the game of course, ha ha, nice Johnny's a good boy really, ha ha, he didn't mean to chop off his dad's head with a broadsword. Just misjudged the blow a fraction.)



• **Domark's New Beginning**

A safer move, mums and dads, would be a quiet family game, such as wacky (oh dear) Domark's *Trivial Pursuit – A New Beginning*. 'Oh no, not that lame old pile of obscure facts and insignificant details again?' you groan.

Well, yes and no. Yes there are loads of questions that cover the familiar six categories of entertainment, science and nature, history, arts and literature, sport and leisure and geography. But the gameplay has changed a little. Instead of the expected board and dice you move from planet to planet in six different galaxies trying to find the futuristic equivalent of a piece of pie from the original TP. It's not much of a 'new beginning', and if you have the original already then forget it, but otherwise until you know all the answers you can have some great fun. It's pointless to play alone, though, unless you're very honest and admit it when you get answers wrong. (I wouldn't dream of cheating of course... well not much anyway.)

A very unfunny joke

Educational software on the CPC is very scarce, so three cheers to Rickitt Educational Media who specialise in it: free catalogue on request (0460 57152). Prices, however, as always for this material, are a joke.

Don't tell anyone

- Having trouble with Imagine's *Vindicator*? The passwords to get into parts two and three are 'Oppenheimer' and 'Enolagay' respectively. (One helped invent it, the other dropped it on Hiroshima. Very tasteful.)

Bulletin baud

(& other tired comms puns)

An old favourite is back – one of my fave bulletin boards is online again. Cynotel runs on a CPC (hear, hear) with one of those huge second drives and some clever software. If you're a CPC comms freak give it a whirl: V23 Viewdata, 7 data, even parity, 1 stop bit. Number is 01-346 2816, 8PM-8AM.

- Players of Firebird's *Savage* can get three lives in the second and third parts of the game. For part two press 'S' to go into password mode and then type in 'SABATTA'. Press 3 on part 3 to enter the password 'FERGUS'.
- And if you haven't yet visited the Mad Gods' Catacombs in Electronic Arts' *Bards Tale* you should say to the priest, 'TARJAN', which is the name of the Mad God himself.
- Finally, did you know that if you type 'IMLYING' into the high score table of Incentive's *Total Eclipse* absolutely nothing whatever happens? Curiously enough it happens with US Gold's *Heroes of the Lance* too.

The great rip-off

Don't know about you but I'm getting pretty damn cheesed off with disk software costing £15 a throw. Disks are about £2-£3 now, so why the huge price difference between tape and disk? Now that disks come without the protective plastic case (remember them?), they're cheaper than ever. Of course disk software does have to compete with tape/disk transfer programs, and those £50 black box thingummies. Even so it's a bit of a cheek.

Look on the bright side though – think of all those ST and Amiga owners forking out £20 plus for a game. And their disks are cheaper than CF2's! Tough, ain't it?

Steve Carey

Why don't you let us have your views? Write – on this or any CPC-related topic – to Steve Carey, CPC Centre, New Computer Express, 4 Queen St, Bath BA1 1EJ. You'll get into print in Britain's fastest growing, most dynamic and hyped computer weekly, and maybe you'll win yourself a 'mystery free gift' too (i.e. can't think just now what to give you).

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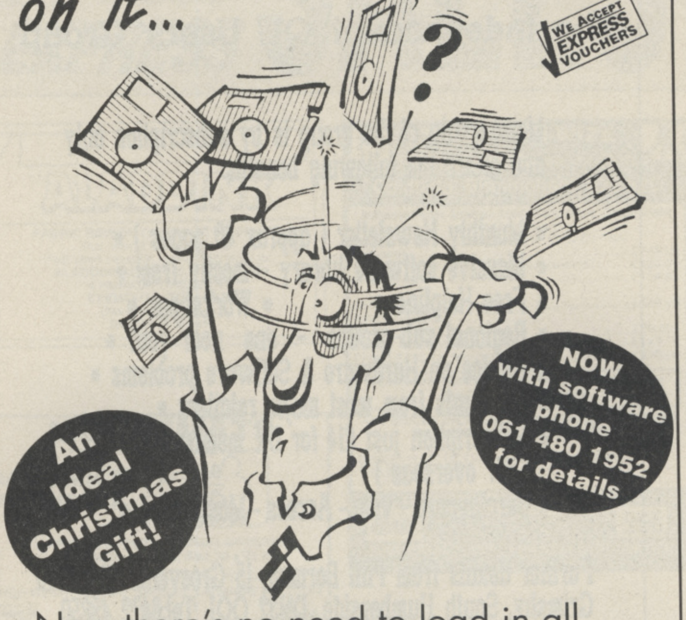
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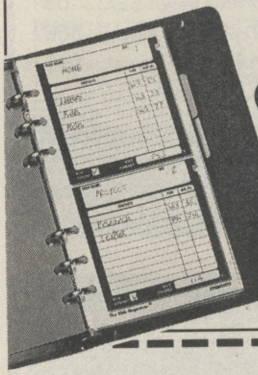

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PCW PATCH

Blocks to that

Tetris, the game that does for the PCW what Euclid did for the Krypton Factor fit-the-shapes tests, is one of the few non-adventure games that has come across from the other formats on to the PCW.

Maybe some of its success lies in its Russian mystique; certainly the idea of building walls lends an East bloc flavour to it. Or maybe it's a metaphor for *perestroika*?

The programming on the PCW version is a bit dodgy, though, and looks to have been knocked together by a BASIC hack absent mindedly watching *EastEnders*.

Some things you can live with – the fact that your name always incorporates the last few key presses of the gameplay so that you are recorded for posterity in the high score table as '79778'; the irreversible reversing out of the screen when dumped back to CP/M; even the recursive loops you get in after playing more than twenty minutes in which the same sequence of shapes comes down enabling you to work out a system of playing ad nauseam and compiling vast scores.

The only things you can't live with are its maddening addictiveness – do they really have *Tetris* at Acid House parties? – and that awful double beep that accompanies the drop of every brick.

However, all the tools to remove it can be found on the systems discs supplied.

After playing a game, you go to CP/M and use PIP *.* to copy all files from the game disc to the memory, and from there onto a blank disc. Using LocoScript, that well-known hackers' tool, you can rename the file which has an apparently blank name (or a string of capital thetas) to TETRIS.COM.

This copy disc works exactly as the original. Now using SID.COM (side 3 on the 8000s systems discs) you can change the byte at 0CEF from 28 to 3A. This is done by running SID and at the # prompt inserting the *Tetris* copy disc and typing RA:C[RETURN]. Next you type S0CEF[RETURN]3A[RETURN] then a full stop and WA:C[RETURN]. The new version of the game is beep free.

Rob Ainsley

Now the shooting starts

9512 owners who like shooting things other than mail have always got a raw deal out of software houses.

The only games for the PCW have been adventures, and sensible things like* Scrabble *and Chess. Now at last Digital Integration have recognised that in every businessperson there's a ruthless killer trying to get out.

Tomahawk, the helicopter combat simulator which puts you behind the cockpit of an Apache, has just come out for the 9512. It costs £19.95; further details on 0276 684959.

Q corner

Quanta shake-up

Quanta, the QL User Group, has undergone major changes in recent months. Virtually all the old guard committee and officials have departed, leaving a completely new team at the helm.

The new committee walked slap into threats of writs and legal action over old articles in the user magazine and ended up apologising to a software house. Some members forced a Special General Meeting expressing a lack of confidence in the new committee and seeking to retract the apology, but got nowhere. The members endorsed the committee's action by a landslide, surprisingly supported by most of those who forced the meeting in the first place.

Easier transfer

Hot on the heels of* DiscOVER, *the QL-PC transfer utility, comes a new, revamped version of Media Manager from Digital Precision. The original* Super Media Manager *always had the ability to read alien format diskettes (including MS-DOS), but the revamp is claimed to do a two-way file transfer with a much easier user interface.

When it was said there was 'new blood' in Quanta, no-one expected it to be on the carpet! The committee were playing down the lively meeting as 'frank and businesslike'.

Protected species

Copy protection has always been the subject of fierce controversy between software producers and users. Of late, though, the anti-protection lobby seems to have prevailed.

The QL market is inexorably moving over to disk-expanded systems. The Thor abandoned microdrives completely, and software houses with protected cartridge programs have had to convert such programs to disk to retain the interest of those users. They have also taken the opportunity to drop the copy protection systems on the programs at the same time.

Some companies have supplied unprotected software since the start. Tom Dolezal of Talent + said "We have converted about 8 programs in the last year and removed the protection in the process. The effort of inserting additional protection for those supplied on disk was not sensible. Some customer registrations included comments about the protection, but we don't see it as a major issue."

Archival quality

Archive users with version 2.3 onward may be unaware of undocumented box graphics which go some way to improving the look of screen form designs.

After issuing the command "sedit" try typing F5 followed by any of the upper case letters A to K. The full range of box graphics is present, including corners, tee's and intersects. These graphics are not only available from the built-in screen editor, but can be incorporated into your own archive procedures by printing the appropriate code. Codes range from 225 to 235 and are used in the form "print chr(226);" to obtain a top right corner or "print chr(230);" for a left tee.

Although box graphics are missing from version 2.0, other undocumented useful print codes exist. Try "print 'hello';chr(26);' hello ';" for instant reverse video.

Paul Connell

BEEB BOX

Christmas is coming

The decorations are up and Christmas is on its way, at least in the commercial world. This is the time of year when all the big software houses, in particular games firms, will be releasing their best shots to hit the lucrative Christmas market.

Network boost

Econet, Acorn's long-established network, received a fillip this week with two separate companies announcing performance upgrades for it. ARCshare speeds up communications by a factor of around 20 by integrating an Archimedes into the network. Contact European Communications Group on 01-546 0827. Meanwhile, SJ Research Ltd have announced Application Server, which, using BBC micros as terminals, runs MS-DOS and UNIX applications at high speed on the network. For further information contact Peter Rycraft on 0223 461406.

In the relatively sedate BBC world this means Superior/Acornsoft. Up until recently Superior seem to have been living off the phenomenal success of the seemingly endless *Repton* series. All that has changed with the release at last of *Exile*, which promises to be the space/strategy/arcade game to end all such games (at least on the BBC). That's the good news. The bad news is I haven't actually got a copy to play with – aaargh!

Computer games, however, are not the only things to surface at this time of year. In the world of education things are happening. You may think this strange, as in most primary schools almost nothing gets done at this time of year. In fact many LEAs (education authorities) and schools do have a budget to dispose of around now. With this in mind, both ESM and Resource have recently announced new products for the educational market.

From ESM come two new adventures, *Puff* and *Martello Tower*, plus a colour version of the Screenprint printer dump ROM. Of these, *Colour Screenprint* is probably the most significant, being pitched right at *Snatch* from 4Mation. It had better be good, though, because right now *Snatch* is my favourite program. Watch this space for head-to-head combat soon.

Resource, on the other hand, have cannily pitched their new releases straight at harassed teachers looking for something to occupy their kids. *Christmas Tales* is a package that allows infant-age children to put together their own story using pre-defined graphics and text, which can be edited, and then put together in pages. When I showed this package to my educational correspondents they fell over themselves in an indecent haste to get to it. I suspect Resource have got a winner on their hands here. *Fairy Lands* is aimed at a similar audience, but is set in a mythical time and place. Resource can be contacted on 0302 63800, and ESM on 0223 65445.

Andrew Brown

MSXTRA

MSX games

It's been more than a year since the MSX user had a dedicated magazine, so this week I'm look at the MSX games scene for this period – especially the good old shoot-em-up.

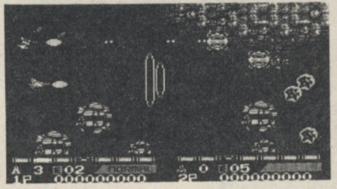
First, a game from Players called *Fire Hawk*, priced at £1.99. You fly your Fire Hawk fighter over a rapidly-scrolling landscape, blasting or trying to dodge the enemy over six stages. The graphics are good and the sound adequate. Well worth the asking price.

Voidrunner is reminiscent of *Centipede*, but with far more nasties. It's extremely hard to play, due mainly to the messy graphics, with fudges of colour on a fuzzy scrolling background. Compared to some of the excellent cartridge games from the likes of Konami, even at £2.99 it's not good value.

Next, two games from Microvalue, both priced at £2.99 and released earlier this year – *Cetus* and *Quasar*. In *Cetus* you pilot your ship in much the same way as you would in *Buck Rogers*. Scrolling is quite good (for an MSX) and control responsive. *Quasar* is another *Uridium* lookalike. It's quite difficult, so it might hold your interest for a while.

Hype – one of my all-time-favourites – is programmed by Methodic Solutions and distributed by Aackosoft of Holland. It's over a year old, and should have been a big seller in the UK, but it never got an official release here. To say the game is fast and furious is an understatement. There are numbered power capsules to collect – shades of *Nemesis* here – and you're sure going to need the extra firepower. If you see *Hype*, buy it.

Finally, two Konami releases – *Nemesis 2* and *Salamander*. Both are classic shoot-em-ups with collectable weapons and end-of-level guardians. *Salamander* has vertical as well as horizontal scrolling sections, as well as featuring more weapons, and the stages are far harder to beat. Graphics and sound on both cartridges are simply first class. The scrolling is a bit iffy, but is soon forgotten when the action begins.



• Salamander

Keith Neal

Coming soon

I should soon have detailed specs on the new MSX 2+. Already released by ASCII in Japan, hopefully it won't be too long before we see it in Europe.

And I should shortly be getting a product/price list from a UK supplier of MSX hardware and software advertising peripherals for the MSX range.

Plus I've just received U.S. Gold's The Games, Winter Edition and Psycho Pigs UXB. Watch this space for full reviews.

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PSsst!

A last look at the computer scene by cynical old hack, Private I

TEN FACTS

you didn't know about Alan Sugar

1. Six months-odd after the launch of the Amstrad CPC, Sugar was asked whether his teenage son had a computer. "Er, yes," quoth the great man, with a tad less confidence than is the norm. And it's a 464, is it? A pause was followed swiftly by another pause, before the reply, "Er, no – it's a Spectrum." From this embarrassing episode came old Shoog's burning desire to buy up Sinclair Research *(are you sure about this? – Ed).*

2. Sugar's firm does not run its new Bulletin Board Service on an Opus PC, despite the shockingly inaccurate indications to the contrary in *The Guardian*. Opus is the software for the system, and has nothing to do with Opus the PC clones firm. The actual system runs on genuine Amstrad PC 1512s. Knuckles are currently being rapped at *The Guard...* – oh, and at *Express* as well. There was a passing reference to the Opus business somewhere in last week's issue. *(A Lawyer Writes: That's not an apology. Grovel immediately.)*

3-10. Unfortunately, there now isn't quite room for all the other fascinating Sugar facts.

Not wholly Sensible

Picture the scene: there was Palace boss Pete Stone all ready to pop over to Germany to wow the DeutscheMagazinfolk with the Amiga version of *The Shoot 'Em Up Construction Kit.* But at the last moment, the trip was aborted. And why? Well stone me (as young Pete would say) but a whole disk of graphics was er, wiped. And by whom? Step forward John Hare, from the entirely wonderfully-named programming team, Sensible Software.

• Hare: very Sensible

An inspired choice

Ever heard of Digital Inspiration? You know the outfit – been around ages, best known for simulations, forever banging on about authenticity and suchlike.

Well, up to a point. That's Digital Integration. Digital Inspiration is actually a new back catalogue-publishing budget firm headed by the small, but perfectly formed computer hack David Lester. And guess what? The real DI is consulting with m'learned friends over possible legal action.

Oh what a surprise, knock me down with a feather, swipe me sideways etc etc. Just why didn't the droll Lester-him-than-meets-the-eye hit on another name that sounded less like a rival software house? What about Nocean, Doomark, US Golf, Grandslab or Masterchronic? Maybe Melbourne Hut? Send your entries to the David lester Survival Fund, c/o PSsst, c/o Express, etc

Hype springs eternal 2

Another quite extraordinarily exciting opportunity for you to display your knowledge of the real meanings of computer terms.

This week: The Business Market. What do the following mean?

1. "We're keeping all our options open with regard to PS/2/MCA etc etc"
a) We're waiting to see what everyone else does b) The design team's late again c) Like all the other firms, we can't really allow ourselves to believe that IBM have well and truly screwed it up.
2. "This really is a software revolution"
a) It's another word processing package b) It's another spreadsheet c) It's either a) or b) and is hopelessly over-priced.
3. "I'm sorry if you were at all misled when you bought our product"
a) Tough – we've banked the cheque, schmucko b) Aren't salesmen simply wonderful?
4. "It'll be released in the second quarter of next year"
a) It won't b) It will, but we're talking about our financial year which begins in September c) God alone knows when it'll be ready – we just want to score on the column inches.
5. "I'm afraid our technical chief is in a meeting right now"
a) I know I'm lying...b) You know I'm lying... c) But this is a pointless charade that we all have to go through all the time
6. "Our next machine will be 586-based"
a) Hi – I'm a marketing man and so I'm talking complete garbage b) I'm bluffing: computer journos will always believe anything and will never want to reveal that they hadn't heard of any techno breakthrough.
7. "You'll be amazed by our terrific new printer"
a) It's unbelievably loud b) It's unbelievably slow c) It's both a) and b) when it actually deigns to work.
8. "The software is designed in compatible modules"
a)...So the cheap-sounding price is a straight lie, because you have to have all three to do anything even part way plausible b) We haven't quite finished the rest of it yet
9. "We've developed a remarkable new way to solve all the traditional problems associated with portables"
a) We've gone back to desktops b) We're providing five mile long power cables c) You get free use of a Marketing Support Assistant to help you carry the beasts.
10. Have you tried our customer support department?
a) I didn't listen to what you said and I'm sure it would've been boring anyway b) I have not the slightest reason to believe that anyone at this firm either could help or would be interested in helping you with your dreadfully tedious enquiry c) Look here you big whelk: you bought the damn thing so it's your problem.

Assistant hacks wanted

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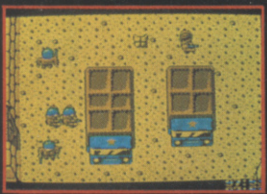

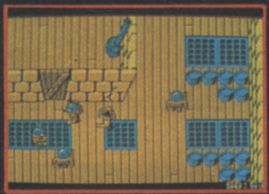

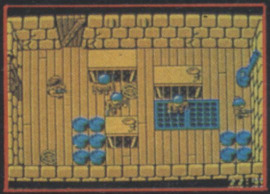

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